Technical Report

2012 Northeast Recreational Boater Survey:

A Socioeconomic and Spatial Characterization of Recreational Boating in Coastal and Ocean Waters of the Northeast United States

ABSTRACT

A partnership among industry, government, and nongovernmental organizations conducted a survey of marine recreational boaters from Maine, New Hampshire, Massachusetts, Rhode Island, Connecticut and New York during the 2012 boating season. The 2012 Northeast Recreational Boater Survey (2012 NE Survey) characterizes the recreational boating activity of 373,766 marine boaters from Maine to New York. The project produced detailed maps of boating routes across the region and estimated that marine recreational boating contributed $3.5 billion to the Northeast economy in 2012. Survey collaborators provided input and assisted with every phase of the study, including survey scoping and development, study design, implementation, and interpretation of the survey results. Results include regional and state maps of popular recreational boating locations; busy boating routes; and activities, such as recreational fishing and wildlife viewing. Economic analyses revealed that 907,000 boating trips on the ocean generated approximately $3.5 billion and the equivalent of nearly 27,000 year-round jobs in the Northeast in 2012. The results can be used by ocean managers, the boating industry and others in many ways, such as identifying waters important to recreational boaters; informing business planning and economic development; and planning for compatible and sustainable ocean uses.

ACKNOWLEDGEMENTS

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A number of technical consultants provided key assistance during the survey, including Ecotrust, Center for Survey Research at the University of Massachusetts Boston, Urban Harbors Institute at the University of Massachusetts Boston, University of New Hampshire Survey Center, Dan Hellin Consulting and Marine Consulting Services.

Several marine industry organizations and others contributed financial support for the 2012 Northeast Recreational Boating Survey, including Maine Coastal Program, Grady-White Boats, Inc., Massachusetts Marine Trades Association, Connecticut Marine Trades Association, Marina Bay Boston Harbor, US Harbors and the Gordon and Betty Moore Foundation. Several Marine Trades Associations also co-sponsored workshops to review and discuss data.

Cover image: courtesy of Urban Harbors Institute of UMass Boston

Primary Authors:

Kimberly Starbuck, Project Manager, SeaPlan

Andrew Lipsky, Director of Science and Policy, SeaPlan

Contributing Authors

Kate Longley, Project Scientist, SeaPlan

Dave Kellam, Communications Manager, SeaPlan

Anthony Roman, Senior Research Fellow, Center for Survey Research, UMass Boston

Leslie Genova, Senior Associate, Industrial Economics, Inc

Brian Morrison, Principal, Industrial Economics, Inc

Bruce Carlisle, Director, Massachusetts Office of Coastal Zone Management

Reviewers:

David Blatt, CT DEEP

Greg Capobianco, NY Department of State

Bruce Carlisle, Director**,** Massachusetts Office of Coastal Zone Management

Michele DesAutels, First Coast Guard District

Grover Fugate, Rhode Island Coastal Resources Management Council

Nathalie Grady, MA Marine Trades Association

Dan Hellin, Dan Hellin Consulting

Jeff Herter, NY Department of State

David Kozak, CT DEEP

Wendy Mackie, RI Marine Trades Association

Eleanor Mariani, CT Department of Energy and Environmental Protection (DEEP)

Stephanie Moura, Executive Director, SeaPlan

Nicholas Napoli, Northeast Regional Ocean Council (NROC)

Matthew Nixon, Maine Coastal Program

Susan Swanton, ME Marine Trades Association

Brian Thompson, CT DEEP

John Weber, Northeast Regional Ocean Council (NROC)

Grant Westerson, CT Marine Trades Association

Jack Wiggin, Urban Harbors Institute of UMass Boston

Christian Williams, NH Coastal Program at the NH Department of Environmental Services

Prassede Vella, Massachusetts Office of Coastal Zone Management

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SeaPlan
89 South Street, Suite 202
Boston, MA 02111

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Acronyms and Glossary of Terms

Acronyms

2010 MA Survey	2010 Massachusetts Recreational Boater Survey
2012 NE Survey	2012 Northeast Recreational Boater Survey
CMSP	Coastal and marine spatial planning
CSR	Center for Survey Research, University of Massachusetts Boston
CT	Connecticut
CT MTA	Connecticut Marine Trades Association
CZM	Massachusetts Office of Coastal Zone Management
EEA	Massachusetts Executive Office of Energy and Environmental Affairs
GIS	Geographic Information System
GOM	Gulf of Maine
IMPLAN	IMpact analysis for PLANning - software
MA	Massachusetts
ME	Maine
MEMTA	Maine Marine Trades Association
MMTA	Massachusetts Marine Trades Association
NH	New Hampshire
NMMA	National Marine Manufacturers Association
NOP	National Ocean Policy
NROC	Northeast Regional Ocean Council
NY	New York
PWC	Personal watercraft / jetski
RI	Rhode Island
RI MTA	Rhode Island Marine Trades Association
UHI	Urban Harbors Institute, University of Massachusetts Boston
UNH	University of New Hampshire
USCG	United States Coast Guard

Glossary of Terms

Coastal: Land next to the sea; the seashore

Compatibility: A state in which two things are able to exist or occur together without problems or conflict

Confidence limits: A statistical range with a specified probability that a given parameter lies within the range or Statistics of an interval of values bounded by confidence limits within which the true value of a population parameter is stated to lie with a specified probability

Direct effects: Changes in the economic activity of a particular industry as a result of a change in demand for the goods or services that industry provides. In the context of this analysis, for example, a change in spending by boaters on groceries would have a direct effect on output and employment in NAICS 445 – Food and Beverage Retail

Ecosystem Based Management: An environmental management approach that recognizes the full array of interactions within an ecosystem, including humans, rather than considering single issues, species, or ecosystem services in isolation

Eligible boaters: Boaters that responded to the recruitment survey, used their boat in marine water for recreational purposes, and had an email address/access to the internet for the online surveys

Federal waters: Area of water over which the federal government has jurisdiction (3 nautical miles out to 200 nautical miles)

Freshwater: Of, relating to, living in, or consisting of water that is not salty. Situated away from the sea; inland

Geospatial analysis: An approach to applying statistical analysis and other informational techniques to data which has a geographical or geospatial aspect. Such analysis would typically employ software capable of geospatial representation and processing, and apply analytical methods to terrestrial or geographic datasets, including the use of geographic information systems and geomatics

Human use characterization: Description of how people utilize something

Incentives: A thing that motivates or encourages one to do something

Indirect effects: Changes in the output of industries that supply goods and services to those that are directly affected by the initial change in expenditures. Following the example provided above, a change in spending by boaters on groceries might have an indirect effect on output and employment in NAICS 311, Food Manufacturing

Induced effects: Changes in household consumption arising from changes in employment and associated income that are the result of direct and indirect effects. For example, an increase in employment in NAICS 445 – Food and Beverage Retail would lead to additional spending on a variety of goods and services by the industry's new employees

Inland: Of, concerning, or located in the interior of a country or region away from a sea or border

Leisure: Time or opportunity for ease, relaxation, etc.

Marina: A dock or basin providing secure moorings for pleasure boats and often offering supply, repair, and other facilities

Marine Protected Areas: A protected area whose boundaries include some area of ocean

Marine Spatial Planning: Process that brings together multiple users of the ocean – including energy, industry, government, conservation and recreation – to make informed and coordinated decisions about how to use marine resources sustainably

Marine: Of, found in, or produced by the sea

Nautical: Of, relating to, or associated with seamen, navigation, or ships

Peak season: The season when travel is most active and rates are highest

Per capita: Per unit of population; by or for each person

Powerboat: A boat propelled by an internal-combustion engine or other motor

Public-Private Partnership: A business relationship between a private-sector company and a government agency for the purpose of completing a project that will serve the public

Qualified boats: Boats that were eligible to be randomly selected for the survey, including boats 10 feet or greater in length, identified as recreational/pleasure use in marine or tidal water, and registered in a "coastal" county or town. Boats identified as "freshwater use" were not included in the list of qualified boats

Random sample: A sample in which every element in the population has an equal chance of being selected

Raster: A spatial data model that defines space as an array of equally sized cells arranged in rows and columns, and composed of single or multiple bands. Each cell contains an attribute value and location coordinates. Unlike a vector structure, which stores coordinates explicitly, raster coordinates are contained in the ordering of the matrix. Groups of cells that share the same value represent the same type of geographic feature

Recreational boating: Use of boats for pleasure (not commercial)

Recreational sport fishing: Fishing for pleasure or competition. It can be contrasted with commercial fishing, which is fishing for profit, or subsistence fishing, which is fishing for survival

Regattas: A sporting event consisting of a series of boat or yacht races

Representative sample: A subset of a statistical population that accurately reflects the members of the entire population. OR A representative sample should be an unbiased indication of what the population is like. In a classroom of 30 students in which half the students are male and half are female, a representative sample might include six students: three males and three females

Spatial data: Data or information that identifies the geographic location of features and boundaries on Earth, such as natural or constructed features, oceans, and more. Spatial data is usually stored as coordinates and topology, and is data that can be mapped. Spatial data is often accessed, manipulated or analyzed through Geographic Information System

Stakeholder: A person with an interest or concern in something

Standard deviation: A quantity calculated to indicate the extent of deviation for a group as a whole.

State waters: Area of water over which a state has jurisdiction (normally 3 nautical miles from coastline, with some exceptions)

Statistically valid: Extent to which a concept, conclusion or measurement is well-founded and corresponds accurately to the real world. OR the degree to which evidence and theory support the interpretations of test scores

Stratified sample: A sample that is not drawn at random from the whole population, but separately from a number of disjoint strata of the population in order to ensure a more representative sample.

Supplemental sample: To address large differences in the number of qualified boats among states, certain states (i.e., CT, RI, ME, and NH) with fewer qualified boats had a "population size" supplemental sample of boats (selected at random) in addition to the pure random sample. A "large boats" (26 feet or longer) supplemental sample was also developed for each state. Because the 8,860 "26 feet or longer" boats selected for the pure random sample represent a small percentage of all qualified boats (17.7%), but may be responsible for a large amount of expenditures and interstate travel, the team added 1,772 (20% extra) "26 feet or longer" boats

Temporal: Of or relating to time

Trip-related expenditures: Spending in relation to a boating trip on the water

Visit-related expenditures: Spending in relation to a visit to a boat (but did not take the boat anywhere)

Yearly expenditures: Spending throughout the course of the year on boating-related items that are because of a boat trip or visit (e.g., boat taxes and storage)

Year-round job: Full-time job lasting twelve months

Executive Summary

Utilizing an innovative survey design and an effective public-private partnership among industry, government, scientists and non-governmental partners, the 2012 Northeast Recreational Boater Survey (2012 NE Survey) characterizes the recreational boating activity of 373,766 marine boaters from Maine to New York. The project produced detailed maps of boating routes throughout the region and estimated that marine recreational boating contributed $3.5 billion to the Northeast economy in 2012. The 2012 NE Survey advanced the use of social science tools and technologies to effectively characterize human uses of the ocean, including participatory mapping technologies, online survey tools, socio-economic analysis and collaborative research with stakeholders and industry to produce results that are essential to regional and state coastal ocean planning efforts and are valuable for industry business planning.

The 2012 NE Survey purpose, framework, and key findings are below. For more details and additional results, see the full Technical Report that follows.

Survey Purpose and Focus

It is important to understand where, when and how people use the ocean – whether for recreation, energy production, commerce, fishing, cultural traditions, or otherwise - to minimize potential conflicts and maximize compatibilities among user groups, foster socio-economic vitality, and achieve sustainable ocean uses that integrate resource conservation. Intensifying development pressures from comparatively new uses, such as offshore wind farms and ocean aquaculture, have "spark[ed] conflicts with more traditional activities such as shipping and recreational boating,"[1] underscoring the need to have reliable data on a full range of ocean uses to support better planning and management of our ocean and coastal waters. In 2011, nearly 35% percent of the United States (U.S.) adult population, about 83 million people, participated in recreational boating.[2] Yet, for this nationally important sector, surprisingly little is known about where people boat, the economic impact of marine recreational boating and other information useful for ocean managers, the boating industry and boaters themselves. To help fill this information gap for one region of the U.S., the **2012 Northeast Recreational Boating Survey** (2012 NE Survey) gathered spatial, temporal, and socio-economic data on marine recreational boating and boating-based activities, including fishing, SCUBA diving, swimming, relaxing, and wildlife viewing.

The team designed the 2012 NE Survey to fill specific information needs identified by government agencies and the boating industry to develop industry-informed, scientifically-valid data on marine recreational boating activity in the Northeast region. As such, the study focused on marine boat owners with boats registered or documented in coastal[3] counties in the Northeast. The study does not capture boating activity by freshwater boaters, commercial or charter "for hire" vessels, or vessels registered outside of the coastal counties of the Northeast.

Survey Conducted through an Effective Public-Private Partnership

SeaPlan, an independent nonprofit ocean science and policy group, partnered with the Northeast Regional Ocean Council (NROC), the states' coastal agencies, marine trades associations composed of many private industry representatives, First Coast Guard District and others to conduct the 2012 NE Survey. This public-private partnership provided input and assisted with every phase of the study, including survey scoping and development, study design, implementation of the 2012 NE Survey instrument, outreach and interpretation of the survey results.

1 Associated Press. "NOAA chief says new ocean uses creating conflicts." PHYS ORG, 21 July 2009. Web. 1 July 2013. <http://phys.org/news167373,736.html>

2 National Marine Manufacturers Association. 2012. 2011 Recreational Boating Statistical Abstract.

3 Defined "coastal" counties and towns as those that border marine water, those that were identified in the state's coastal plan, or those that were highlighted by state coastal planners as likely containing boaters that take part in a considerable amount of marine boating activity (see "Methodology" chapter for more detail).

Survey Framework

Guided by input from project partners, the 2012 NE Survey framework included:

- Sample Recruitment
- Data Collection
- Data Analysis
- Reviewing Results

Sample Recruitment: SeaPlan adapted a methodology that was effective for the 2010 Massachusetts Recreational Boater Survey to invite a representative random sample of registered and documented vessel owners in the Northeast to participate in the 2012 NE Survey. From the 373,766 qualified[4] registered and documented boats from coastal counties in Maine, New Hampshire, Massachusetts, Rhode Island, Connecticut and New York, the survey team sent invitations to approximately 68,000 randomly selected boat owners, and over 12,000 boat owners (18.5%) agreed to participate in the 2012 NE Survey.

Data Collection: Between May and October, 2012, six Monthly Surveys and an End of Season Survey collected quantitative and qualitative data from participating boaters. The Monthly Surveys consisted of a questionnaire to capture trip-related expenditures and demographic information; and an innovative online mapping tool that enabled participants to map their marine recreational boating trips — including boating routes and locations they visited for activities, such as fishing and SCUBA diving. Through an End of Season Survey, boaters documented yearly expenditures and provided their opinions on important topics, such as boating safety and compatibility of boating with other ocean uses.

Data Analysis: The study team used a range of methods to analyze the data. Geographic Information Systems (GIS) specialists analyzed the spatial data to develop maps displaying boating activity throughout the Northeast. Economists used "Impact analysis for PLANning (IMPLAN) economic model to develop economic impact estimates. Statisticians used statistical methods to analyze the demographic data. Products include maps of recreational boating activity, economic impact estimates, and a wide range of useful data on the boating community and their opinions on important boating-related topics.

Reviewing Results: After surveying was complete, the team convened five in-person workshops with state coastal planners and over eighty industry representatives to review the results to ensure proper characterization of the data.

4 Defined "qualified" as those boats: 10 feet or greater in length, identified as recreational/pleasure use in marine or tidal water, and registered in a "coastal" county or town. Boats identified as "freshwater use" were not included in the list of qualified boats. See "Methodology" chapter or more details.

Key Findings

The Public-Private Approach and Study Design was Effective for this Survey

The success of the 2012 NE Survey demonstrated that the public-private collaboration model and the study design combined for an effective approach. The study incorporated the best available technology and social science methods to directly engage an ocean industry in data collection and analysis. The survey results were reviewed by state coastal planners and over eighty industry representatives through in-person workshops in each New England coastal state. In addition, the survey tools we employed – both questionnaires and mapping technologies - were effectively utilized by survey respondents, with over ninety percent of survey respondents[5] indicating that they would participate in future surveys if given the opportunity. In Massachusetts, the new data are already being utilized as the Commonwealth revises its Ocean Management Plan in consultation with state boating industry representatives.

Marine Recreational Boating is a Major Economic Sector

Model results estimate that marine recreational boating contributed **$3.5 billion** to the Northeast economy in 2012 and increased the labor demand in the region by 26,929 year-round jobs[6], mainly in the following categories:

- Leisure and hospitality: 7,720 year-round jobs;
- Trade, transportation and utilities: 6,728 year-round jobs; and
- Boat repair and other services: 5,650 year-round jobs.

Economic impact estimates and number of year-round jobs for each state in the Northeast are as follows:

- Maine: $205 million; 1,854 year-round jobs
- New Hampshire: $69 million; 546 year-round jobs
- Massachusetts: $840 million; 6,498 year-round jobs
- Rhode Island: $227 million; 2,008 year-round jobs
- Connecticut: $554 million; 4,299 year-round jobs
- New York: $1.4 billion; 10,828 year-round jobs

5 Respondents to this question on the end of season survey (n = 2,054).

6 One year-round job is equivalent to one full-time job lasting twelve months.

Key Findings continued

Additional inter-state impacts7: $186 million; 896 year-round jobs. Economic impact estimates include spending associated with a) boat trips on the water; b) visits to boats while docked or moored; c) other expenditures not associated with a boat trip or visit (e.g., maintenance fees, seasonal storage and boat insurance); and d) additional impacts of this spending on other economic activity. Based on survey results, the average amount each boater spent on boat trips, visits to their boat, and other expenditures in 2012 can be found below:

- Each boater spent on average a total of $1,151 on boating trips in 2012, with most spending on boat fuel/oil ($368); equipment and repairs ($220); and restaurant meals ($195).
- Each boater spent on average $1,700 on visits to their boat in 2012, with most spending on equipment, maintenance, repairs and upkeep ($818); transient/guest dockage ($232); and boat fuel/oil ($158).
- Each boater spent on average $5,848 on other expenditures not associated with a boat trip or visit to their boat in 2012, with most spending on docking, mooring, and storage ($1,378); routine yearly maintenance ($1,190); and boat loan payments ($950).

This study does not account for boat sales and commercial recreational boat activity, or the spending from boats that are registered from states outside the Northeast; as well as jobs that result from this spending, such as boat building.

Most Boater Spending Occurs in the State Where Boat is Registered

In the Northeast, over 79% of boaters' expenditures occur within the state where their boat is registered, with NY boaters spending 97% of their money in NY. This is surprising given the amount of boating activity that occurs between states in the Northeast. These estimates may reflect that many boaters are spending most of their time at the dock, which is supported by the survey results and by industry local knowledge.

Survey Results Describe the Typical Northeast Boater

Survey results paint a clearer picture of the marine recreational boating community in the Northeast, including the following demographic information for survey participants:

- Average age: 59.4 years;
- Gender: Over 90% of survey participants were male; and
- Income: 55.7% of survey participants earned an annual income in 2011 of $100,000 or greater, and 37.6% earned less than $100,000.

7 These additional indirect and induced impacts occurred within the six-state study region as a result of the interrelationship between economic activity in each state and economic activity elsewhere in the region. These impacts cannot be attributed to a particular state.

Most Boating Occurs Close to Shore and Along Popular Boating Routes

The data collected over the six month season confirmed a basic assumption that most boating occurs close to shore, with over half (52.4%) of the boating routes plotted by boaters occurring within one mile of the coastline. High levels of boating activity also occurred in semi-protected bays, harbors off of major cities, and along commonly known boating routes, such as from:

- Narragansett, RI to Block Island, RI;
- New London, CT to Block Island, RI;
- Bridgeport, CT to Port Jefferson, NY;
- Connecticut River, CT to Orient, NY;
- Narragansett RI to Cuttyhunk, MA;
- Boston Harbor, MA to Provincetown, MA;
- Portsmouth NH to Isle of Shoals; and
- Rockland, ME to Bar Harbor, ME.

Most Common Boating Activity is Sportfishing and Boaters Primarily Target Striped Bass

Survey results highlight hot spots for different boating-based activities, such as recreational fishing, SCUBA diving, wildlife viewing, swimming, and relaxing. In addition, the survey reports on the specific species of fish targeted and species of wildlife viewed. In most cases, hot spots coincided with well-known fishing grounds and wildlife viewing locations, such as Jeffreys Ledge and Stellwagen Bank. A total of 4,635 individually logged activity points were mapped by survey participants, and recreational sportfishing was the predominant activity identified in each state, aside from Maine. Interestingly, in Maine, other activities such as wildlife viewing and relaxing were reported more often than fishing.

The survey also confirms the iconic status of Striped Bass (*Morone saxatilis*) as a premiere sportfishery in the Northeast. Forty-six percent of all fishing activity points reported on by boaters targeted Striped Bass (*Morone saxatilis*). Offshore (beyond three miles from the shoreline), Atlantic Cod *(Gadus morhua)* and Atlantic Bluefin Tuna *(Thunnus thynnus)* were the first and second most commonly targeted fish species by boaters, respectively. Confirming the prevalence of bird watching as a major recreational activity, birds were the most common type of wildlife viewed by boaters, accounting for 51% of the wildlife viewing reported by respondents.

Key Findings continued

Most Boaters Can Continue to Enjoy Boating Near Other Ocean Uses

An important component of the 2012 NE Survey was to "take the pulse" of boaters on important related topics, including boating safety and compatibility with other activities and structures. Like the spatial and economic data, this boater opinion information is also useful to entities responsible for marine safety, such as the First Coast Guard District and local Harbormasters, to state and federal agencies with ocean resource management duties, to the industry and to boaters themselves.

Gauging boater opinion on whether they could continue to enjoy boating near other activities and/or structures, 62% responded that boating was compatible with conservation and protected areas. Furthermore, more than half responded that recreational boating was compatible with offshore wind farms and aquaculture (finfish and shellfish farming). See Technical Report for details.

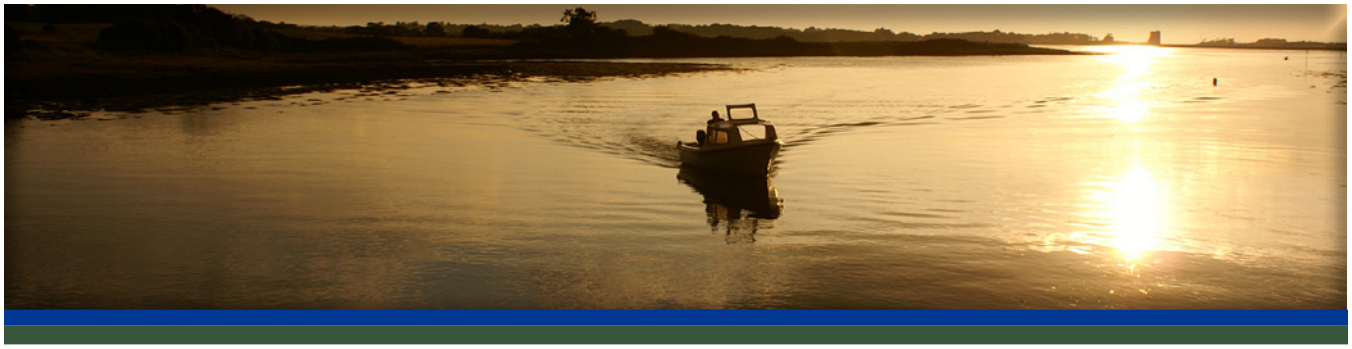
Other noteworthy observations relate to boaters' opinions on boating safety. For example, most survey participants cited fellow boaters' behavior as one of their largest safety concerns on the water, specifically focusing on "inconsiderate actions by others" (74%), "lack of knowledge of navigation rules by others" (58%), and "use of alcohol by boat operators" (43%).

Conclusion

Results from the 2012 NE Survey provide important information for coastal planners and the boating industry. The mapping results show where marine recreational boating activities occur in time and space and the economic analysis describes the contribution of marine recreational boaters' spending to regional and state economies.

This work is an example of coupling social science research methods with stakeholder-informed data collection and analysis to provide data products that address both governmental and industry needs and interests. The information can be used to help industry and planners work together to encourage compatibilities among existing and new ocean uses such as siting aquaculture in areas with low boating activity. Survey data on boating use patterns can also assist with industry business planning, such as event organizing or investments associated with locating new or expanding existing facilities. Furthermore, understanding the amount spent by boaters and items purchased can help with industry marketing campaigns.

The data from the 2012 NE Survey are available on the SeaPlan website (www.SeaPlan.org) and on the Northeast Ocean Data Portal (www.northeastoceandata.org). For more details on the 2012 NE Survey and additional results, go to www.SeaPlan.org and download the Project Summary, State Summaries containing results specific to each state, and the full Technical Report.



Chapter 1: Introduction

It is important to understand where, when and how people use the ocean – whether for recreation, energy, commerce, fishing, cultural traditions, or otherwise – to minimize potential conflicts and maximize compatibilities among user groups, foster socio-economic vitality, and achieve sustainable ocean uses that integrate resource conservation. Intensifying development pressures from comparatively new uses, such as offshore wind turbines and ocean aquaculture, have "spark[ed] conflicts with more traditional activities such as shipping and recreational boating,"[1] underscoring the need to have reliable data on a full range of ocean uses to support better planning and management of our ocean and coastal waterways.

Many state and federal resource agencies and industry associations have identified the lack of data on human uses of the ocean as an important science gap on both a national and regional level. As called for in Executive Order 13,547 establishing a National Ocean Policy (NOP), one policy of the United States is to "respect and preserve our Nation's maritime heritage, including our social, cultural, recreational and historical values."[2] Furthermore, the NOP states that "robust public and stakeholder engagement is integral to a successful CMSP [coastal and marine spatial planning] process."[3] As such, the NOP stresses the need to gather sound scientific information that is informed by stakeholder input on the multiple uses of our ocean and coastal waters, including marine recreation, to ensure continued enjoyment of our marine environment for years to come.

On a regional level, the Gulf of Maine (GOM) Regional Ocean Science Council identified "Human Activities and the Oceans" as one of the top five thematic priorities for the GOM[4], and the NY Bight Regional Ocean Science Council similarly recognized "Recreational Uses" as one of the top priorities for the region.[5] Engaging stakeholders in the collection and review of human use data also aligns closely with the Northeast Regional Ocean Council's (NROC) strategy to "engage stakeholders in support of regional ocean planning" and "support ecosystem-based management of the Northeast's marine environment and its human uses."[6]

As such, the 2012 Northeast Recreational Boater Survey (2012 NE Survey) addresses the national and regional need for a study that 1) is designed with input from stakeholders and coastal planners, 2) helps fill a regional gap in information on marine recreational boating activity and areas where boaters participate in boating-based activities (e.g., fishing, SCUBA diving, swimming, relaxing, wildlife viewing), and 3) characterizes the economic impacts of the industry.

1 Associated Press. "NOAA chief says new ocean uses creating conflicts." PHYS ORG, 21 July 2009. Web. 1 July 2013. <http://phys.org/news167373,736.html>

2 Exec. Order No. 13,547, (19 July 2010)

3 Exec. Order No. 13,547, (19 July 2010)

4 Pederson J (Ed.). 2009. Gulf of Maine Strategic Regional Ocean Science Plan. Gulf of Maine Regional Ocean Science Council 2009. NOAA Grant Report #NA060AR4170,019. February 2009. 33 pp.

5 Castel, Jenna. "Developing a Regional Ocean Research and Information Plan in Support of Ecosystem-based Management for the New York Bight (Presentation to Stakeholders)." University of Connecticut.

6 Northeast Regional Ocean Council Ocean Planning Committee. "2013-2014 Work Plan."

1.1 Purpose of this Study

In response to this information need identified on both a national and regional level, the purpose of this study was to gather in-depth spatial and economic data on marine recreational boating and boating-based recreational activities in the Northeast, including state and federal waters of Maine (ME), New Hampshire (NH), Massachusetts (MA), Rhode Island (RI), Connecticut (CT), and New York (NY). Applying a similar methodological approach to the 2010 Massachusetts Recreational Boater Survey (see Callout Box #1), SeaPlan, an independent nonprofit ocean science and policy group, NROC, the First Coast Guard District, state coastal agencies, and marine trades associations conducted the 2012 NE Survey.

The 2012 NE Survey sought to characterize the boating patterns and economic activity of the 373,766 qualified[7] registered and documented (registered) boats from coastal[8] counties and towns in ME, NH, MA, RI, CT, and NY. Using boat registration lists from each state and the U.S. Coast Guard database of documented vessels, SeaPlan worked with statisticians to invite a representative random sample of nearly 68,000 boaters in the Northeast to participate in the 2012 NE Survey. Through a six-month surveying period between May and October 2012, participating boaters provided detailed spatial and socio-economic information on boating activity. Survey results include:

- Economic impact estimates of marine recreational boating to each state and the Northeast;
- Maps displaying boating activity by marine recreational boaters;
- Types and location of boating-based recreational activities (e.g., fishing, SCUBA diving, swimming) carried out by boaters;
- Demographic information on the boating community (e.g., age, gender, income); and
- Boaters' opinions on related topics such as boaters' perceptions of compatible ocean uses and boating safety.

The 2012 NE Survey was designed to fill specific information needs identified by government agencies and the boating industry to develop industry-informed scientifically valid data on marine recreational boating activity in the Northeast region. As such, the study focused on marine boaters with boats registered or documented in coastal counties in the Northeast, and the study does not capture boating activity by freshwater boaters, commercial or charter "for hire" vessels, or vessels registered/documented outside of the Northeast. Furthermore, since the survey asked boaters to report on spending during 2012, and we surveyed currently registered boat owners who purchased their boat prior to 2012, the economic impact estimates did not include boaters' spending on the purchase of a new or used boats. See Chapter 2: "Study Goals & Scope" for more details on the information gathered through this study.

Results from the 2012 NE Survey provide important information for coastal planners and the boating industry. The mapping results help describe where marine recreational boating activities occur in time and space and the economic analysis describes the contribution of marine recreational boaters' spending to regional and state economies.

The information can be used to help industry and planners work together to encourage compatibilities among existing and new ocean uses such as siting wind farms in areas with low boating activity. Survey data on boating use patterns can also assist with industry business planning, such as event organizing or investments associated with locating new or expanding existing facilities. Furthermore, understanding the amount spent by boaters and items purchased can help with industry marketing campaigns. This work is an excellent example of coupling social science research methods with stakeholder-informed data collection and analysis to provide data products that address both governmental and industry needs and interests.

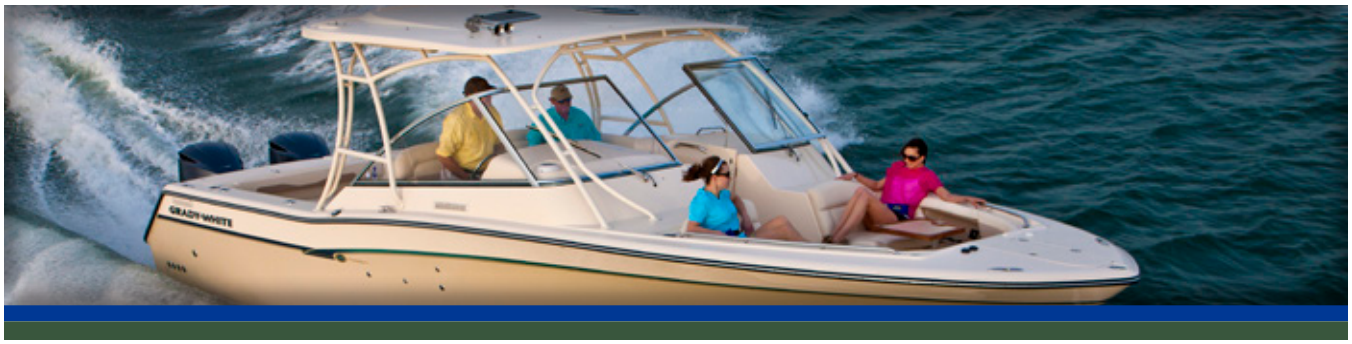
1.2 Guide to this Report

Though this report is comprehensive and reports on all aspects of this significant survey effort it is not exhaustive. The report has been designed for readers to easily find information, whether that is a short synopsis of a specific topic or detailed data for a particular state. The "Executive Summary" summarizes the scope of the study, methodology used, and major findings and overarching themes. The "Glossary of Terms" provides definitions of terminology used in the report.

Subsequent chapters contain details on the "Study Goals & Scope", "Methodology", and "Results"; which consist of maps of boating activity, economic impact estimates, and information on the boating community and boaters' opinions on specific topics. The "Discussion" chapter provides a discussion of the results, notes challenges that arose during the study, and outlines potential next steps and recommendations. The "Conclusion" chapter highlights overarching themes and major findings of the survey effort. The "Appendices" contain supplemental materials, such as a detailed list of survey questions and outreach materials.

7 We defined "qualified" as those boats: 10 feet or greater in length, identified as recreational/pleasure use in marine or tidal water, and registered in a "coastal" county or town. Boats identified as "freshwater use" were not included in the list of qualified boats. See Chapter 3 "Methodology" for more details.

8 We defined "coastal" counties and towns as those that border marine water, those that were identified in the state's coastal plan, or those that were highlighted by state coastal planners as likely containing boaters that take part in a considerable amount of marine boating activity. See Chapter 3 "Methodology" for more details.



Chapter 2: Study Goals & Scope

2.1 Study Goals

The overall aim of the study was to develop a better understanding of how and when humans use the ocean, specifically focusing on marine recreational boating in the Northeast (ME, NH, MA, RI, CT and NY), to support ocean planning efforts and industry business planning. In the early stages of designing the study, SeaPlan and NROC conducted numerous working sessions with state coastal program managers and industry leaders in the Northeast to obtain input on the goals for the study and scope of the analysis.

Guided by input from our survey partners, the primary four goals of the study are to:

1. **Demonstrate the spatial extent of marine recreational boating activity and boating-based activities in the Northeast.** More specifically, this survey collected spatial data on: 1) boating routes taken by marine recreational boaters, and 2) areas where boaters carried out recreational activities during their boating trip (e.g., fishing, diving, nature viewing, swimming, relaxing at anchor). The spatial data are also displayed temporally to better understand recreational use variations throughout the boating season.
2. **Estimate the economic contribution of marine recreational boaters' spending to each individual state (ME, NH, MA, RI, CT, NY) and the entire Northeast region, the flow of boaters' money between states, and the jobs supported by boaters' spending**. Economic impact estimates include money spent on boating trips (e.g., fuel, launch fees), boat visits (e.g., maintenance, groceries) and general expenditures that occurred throughout the year (e.g., storage, taxes, insurance). Estimates also demonstrate the flow of boaters' money between states in the Northeast, and the sectors within the economy most supported by marine recreational boaters' spending.
3. **Develop a study that could be adapted and applied in other states, regions or countries.** For the 2012 NE Survey, we modified the 2010 Massachusetts Recreational Boater Survey (2010 MA Survey) methodology, tools and analysis to accommodate for multiple states and a regional perspective. We also made changes based on "lessons learned" identified from the 2010 MA Survey. The modifications we made for the 2012 NE Survey continue to advance and fine-tune this approach, and can be used in future studies aimed at collecting human use data.
4. **Collect information that can be used by coastal planners and the boating industry for a wide variety of ocean planning and business-related purposes.** The information collected through this survey demonstrates the spatial extent of marine recreational boating activity and the contribution of marine recreational boating to each state and the Northeast region's economy. The 2012 NE Survey also collected information on the boating community and boaters' opinions on boating-related topics, such as safety and ocean use compatibility. The information can be used to help industry and planners work together to encourage compatibilities among overlapping ocean uses and assist with industry business planning.

2.2 Geographic Scope of Study

This effort surveyed owners of boats registered or documented[9] in the Northeast region, including the states of ME, NH, MA, RI, CT, and NY. This study collected economic and demographic data for each state (ME to NY), and spatial data on boating activity primarily for Northeast state and adjacent federal waters, although some data extend into other regions and international waters.

9 Documented vessels include vessels with hailing ports identified in the Northeast region. The "hailing port state" does not necessarily correlate with the state where boat owner lives.

2.3 Scope of this Analysis

This study collected a wide-range of useful data on marine recreational boating and boating-based activities. The data are readily available to examine in a myriad of ways, including analyses on boat type, boat owners, boating activity, spatial use of the waters of Northeast, the spending associated with recreational boating, demographics, and numerous combinations of these topics. For more details on the information gathered through this survey, see Appendix A: "Monthly Survey Questions".

Our analysis focused on developing results related to the four goals listed above. More specifically, based on input from state coastal planners and industry leaders, the scope of this analysis focused on developing the following results:

- Maps of marine recreational boating activity in the Northeast
- Maps of boating-based activities (e.g., fishing, diving, swimming, relaxing at anchor, wildlife viewing)
- Economic impact of marine recreational boating to each state and the Northeast
  - Including: monthly expenditures on boat trips and visits, and yearly expenditures on maintenance, annual upkeep, storage, and other items.
  - Not including: 1) spending by boaters outside of the Northeast, 2) spending on the purchase of a new or used boat, and 3) spending by boaters registered in "inland"[10] counties.
- Interstate flow of money resulting from marine recreational boaters' spending
- Number of year-round jobs and sectors within the economy supported by marine recreational boaters' spending
- Information on marine recreational boaters in the Northeast
  - Age, gender, income for 2011
  - Boat type and size
- Boaters' opinions on boating-related topics of interest to the study partners (e.g., safety, ocean use compatibility)
- Lessons learned and recommendations for future studies

Users could further analyze the data to answer addition questions about boating activity in the Northeast. The data are available through the SeaPlan website (www.seaplan.org) and the Northeast Ocean Data Portal (www.northeastoceandata.org).

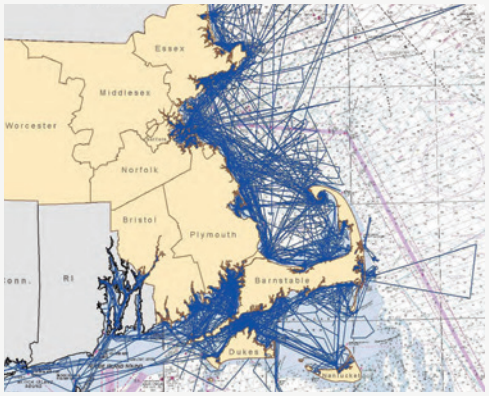
10 Inland counties include all Northeast state counties and towns not directly bordering saltwater or not identified by state coastal planners as likely containing boaters that take part in a considerable amount of marine boating activity. See Chapter 3 "Methodology" for more details.

2010 Massachusetts Recreational Boater Survey

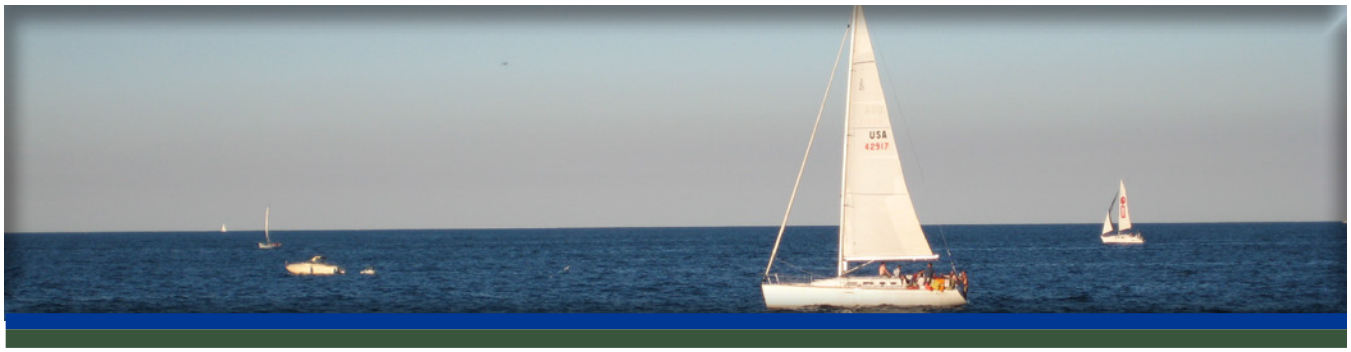
The team modeled the 2012 NE Survey methodology after the 2010 Massachusetts Recreational Boater Survey (2010 MA Survey), which was conducted by SeaPlan (previously known as the Massachusetts Ocean Partnership), Urban Harbors Institute of University of Massachusetts Boston, Massachusetts Office of Coastal Zone Management, Massachusetts Marine Trades Association, and other industry members (for a complete list of partners, see the 2010 MA Survey Technical Report). The 2010 MA Survey successfully gathered spatial and economic data relating to recreational boating activity in Massachusetts coastal and ocean waters during the 2010 boating season. Researchers sent 10,000 surveys to owners of Massachusetts registered and documented vessels in the spring of 2010 asking for participation in the six-month study.

Over 22% responded and provided detailed information through Monthly Surveys between May and October about their boating trips including expenditures, recreational activities, and routes. Using statistical methods and economic models, the demographic and economic information from the sample of boaters was generalized to the population of Massachusetts boaters. Results included maps of recreational boating patterns in coastal waters and the economic contribution of this activity to the Massachusetts economy - an estimated $806 million in 2010.

Given the movement towards ocean planning on a regional scale, and the large amount of interstate boating traffic occurring in the Northeast, the team decided in late 2011 to expand the 2010 MA Survey scope to capture boating activity in the entire Northeast.



Route data collected in 2010 from Massachusetts saltwater recreational boaters was consistent with data collected during the 2012 Northeast Recreational Boater Survey.



Chapter 3: Methodology

As noted previously, the team modeled the methodology design for the 2012 NE Survey off of the "random sample survey" methodology used for the 2010 MA Survey. This methodological approach seeks to characterize the boating patterns and economic activity of the 373,766 qualified registered boaters from "coastal" counties and towns in ME, NH, MA, RI, CT and NY. The following chapter describes the methodology used for the 2012 NE Survey.

3.1 Methodology Rationale

The team utilized a "random sample survey" methodological approach to collect recreational use data for a number of reasons, including:

1. Builds off the lessons learned, partnerships, and success of the 2010 MA Survey (Figure 1) to gather statistically robust economic data and spatial data on marine recreational boating activities;
2. This was the only approach that would generate statistically valid economic impact estimates for both the states and the region, which was identified as a priority (along with spatial data) by both NROC and the boating industry; and
3. This approach uses a stakeholder-informed survey design to collect the best available data on marine recreational boating activity.

Details on the 2012 NE Survey methodology follow.

3.2 Developing Survey Population and Administering Surveys

The team recruited a random sample of selected boat owners throughout the Northeast to participate in a series of monthly online surveys. The surveying period spanned the 2012 boating season, which was defined for the purposes of this study as spanning from May 1, 2012 through October 31, 2012.

Recruiting the random sample of boaters and implementing the monthly online surveys occurred in five key steps:

Step 1: Acquire the Boat Registration Databases
Step 2: Determine Boats Qualified for Survey
Step 3: Develop the Sample of Boaters
Step 4: Recruit Boaters to Register for Six Monthly Surveys and End of Season Survey
Step 5: Administer Surveys to Boaters

Step 1: Acquire the Boat Registration Databases from Northeast States and U.S. Coast Guard

To conduct a random sample survey of registered/documented boaters, we obtained the following seven boat registration databases:

1. Maine
2. New Hampshire
3. Massachusetts
4. Rhode Island
5. Connecticut
6. New York
7. U.S. Coast Guard Documented Vessel Database

Table 1 provides a summary of the information contained in each state's database, including the number of vessels registered with each state, the database fields, and the state entity in charge of boat registrations. To draw the representative random sample of boat owners, each database needed to contain, at a minimum, the following criteria:

1. **Name and mailing address of boat owner**: to mail the initial invitation package to boaters;
2. **Use designation (e.g., pleasure, recreational, commercial):** to capture only recreational boats;
3. **Vessel length:** to pull a stratified sample of varying boat sizes to represent the whole population of boats in the Northeast
4. **Principal mooring area/hailing port (for documented vessels only):** to include those boats in these databases most likely to be used in marine waters of the Northeast[11]

See Section 5.4 "Operational Challenges and Recommendations" for details on how the team addressed inconsistencies among the state registration databases.

11 A large number of documented vessels with mailing addresses outside of the Northeast have their hailing ports within the Northeast and were included as part of the survey.

Table 1: Details on Boat Registration Databases from Each State (ME, NH, MA, RI, CT and NY) and the United States Coast Guard Documented Vessel database

Survey Information	MA	CT	NY	RI	ME	NH	Documented Vessels
What needs to be registered?	Any boat that is powered by a motor and operated on public waterways in Massachusetts. Registration is required even if the motor is not the primary means of propulsion for that boat.	All boats with motors regardless of size, and all boats that are 19 1/2 feet or longer in length exclusive of human powered vessels	Any boat that is motor-driven and is operated on public waterways in NYS requires registration even if the motor is not the primary source of propulsion	All motorized boats, sailboats, and PWCs	All motorboats of any size including PWCs	Motorboats of any size, including documented vessels	Vessels of five net tons or more are eligible for documentation. Vessels used in fishing activities on navigable waters of the U.S. or in the Exclusive Economic Zone (EEZ), or used in coastwise trade must be documented unless the vessel is exempt from documentation. In addition, towboats operating between points in the U.S. or the EEZ or between the EEZ and points in the U.S. and dredges operating in the U.S. or the EEZ must be documented.
Registration Exemptions	Boats registered with the U.S. Coast Guard as documented vessel. Boats registered in another state and being used in MA for less than 60 consecutive days	Documented vessels and vessels registered in another state that are used in CT for less than 60 consecutive days	Boats registered in another state and not kept in New York for more than 90 consecutive days. Commercial boats with either U.S. or foreign documentation Exempt: Boats used exclusively for racing, Kayaks and non-motorized canoes.	Boats registered in another state using Rhode Island waters for 90 days or less Ship's lifeboats or vessels used only for racing Exempt: nonmotorized canoes, and kayaks, and rowboats less than 12 feet.	Those required to be documented; military or public watercraft; owned by government; lifeboat; used exclusively for racing Boat registered in another state may be used in Maine for up to 60 days A ship's lifeboat	Sailboats and sailboards under 12 feet in length; Vessels registered in other states using New Hampshire waters for 30 or fewer consecutive days; vessels owned or operated by the U.S. government	Vessels that do not operate on the navigable waters of the U.S. or in the fisheries in the EEZ, are exempt from the requirement to be documented. Also exempt are Coastwise qualified, non-self-propelled vessels used in coastwise tradea within a harbor, on the rivers or lakes (except the Great Lakes) of the U.S. or the internal waters or canal of any state.
Do documented vessels need to be registered with the state?	No	Yes (if in CT waters for more than 60 days)	Yes	Yes	No	Yes	N/A
Where are boats registered?	MA Environmental Police	CT Dept. Motor Vehicles	NY Dept. of Motor Vehicles	Dept. of Environmental Management	Dept. of Inland Fisheries and Wildlife	NH Dept. of Safety DMV Registration Bureau	United States Coast Guard National Vessel Documentation Center
Length of Time that Registration is Valid	2 years	1 year	3 years	2 years	1 Year	1 year	1 Year
Number of Boats in Database (2011)	139,645	105,499	459.949	34,790	116,825	65,507	5939

[a] Coastwise trade is generally defined as the transportation of merchandise or passengers between points in the U.S. or the EEZ.

Step 2: Determine Boats Qualified for Survey

The seven boat registration databases contained a total of 928,154 registered boats. Prior to selecting the random sample of boat owners to invite to participate in the survey, the team narrowed down the databases to boats that were qualified for the survey. To target recreational boaters that frequent marine waters, the following criteria were used to determine eligibility:

- **Registration**: Currently registered with 1) a state in the Northeast, and/or 2) the U.S. Coast Guard with a hailing port in the Northeast
- **Primary Use:** Designated as "recreational use" or "pleasure"
- **Length:** At least 10 feet in length[12]
- **Freshwater vs. Marine:** Since this survey focuses on boating in marine water, we removed the freshwater boaters from the universe of qualified boats (identified in the Maine and New Hampshire databases).The sample only included "coastal" counties and towns to target marine boaters. We defined "coastal" counties and towns as those that border marine water, those that were identified in the state's coastal plan, or those that were highlighted by state coastal planners as likely containing boaters that take part in a considerable amount of marine boating activity. For example, Middlesex County in Massachusetts does not border the coast, but is likely home to a considerable number of marine boaters due to its proximity to the coastline, and the sample therefore included that county. The "coastal" towns included in the sample were primarily located on heavily transited rivers that lead into the ocean. "Inland" counties and towns include all counties and towns not defined as "coastal."

See Table 2 for a complete list of the counties and towns sampled, and Figures 1 – 6 for maps highlighting counties and towns sampled.

12 The sample only included boats that measured 10 feet or greater in length to avoid including dinghies in the sample. This was a recommendation based on the experience from the 2010 MA Survey .

Table 2: Counties and Towns in Each State from which the Sample of Boaters was Selected

State	Counties	Towns	Additional Notes
ME	York, Cumberland, Sagadahoc, Knox, Waldo, Washington, Hancock, Lincoln, Kennebec, Androscoggin	Specific towns in Penobscot: Dixmont, Newburgh, Orrington, Bangor, Hermon, Holdon, Clifton, Carmel	Boaters labeled as "freshwater" were not included in the sample
NH	Rockingham, Strafford and Hillsborough (weighted toward "tidal" users of approximately 4,200 New Hampshire registered boaters)		Included a supplemental sample of approximately 2,000 New Hampshire registered boaters, to include all remaining "tidal" users from Rockingham, Strafford, Hillsborough, Belknap, Carroll and Merrimack counties.
MA	Essex, Middlesex, Suffolk, Norfolk, Plymouth, Bristol, Barnstable, Dukes, Nantucket		
RI	All counties		
CT	Fairfield, New Haven, Middlesex, New London , parts of Hartford County	Manchester, East Hartford, Hartford, West Hartford, Farmington, New Britain, Newington, Wethersfield, Rocky Hill, Glastonbury	
NY	Westchester County, Bronx County (Bronx); New York County (Manhattan), Kings County (Brooklyn), Queens County (Queens), Richmond County (Staten Island), Nassau County, and Suffolk County.		

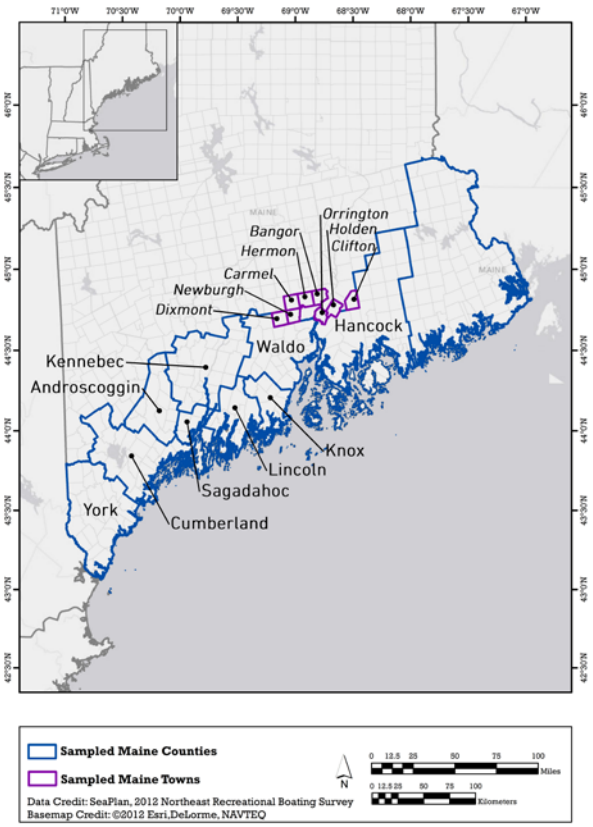


Figure 1: Map of Sampled Maine Counties and Towns

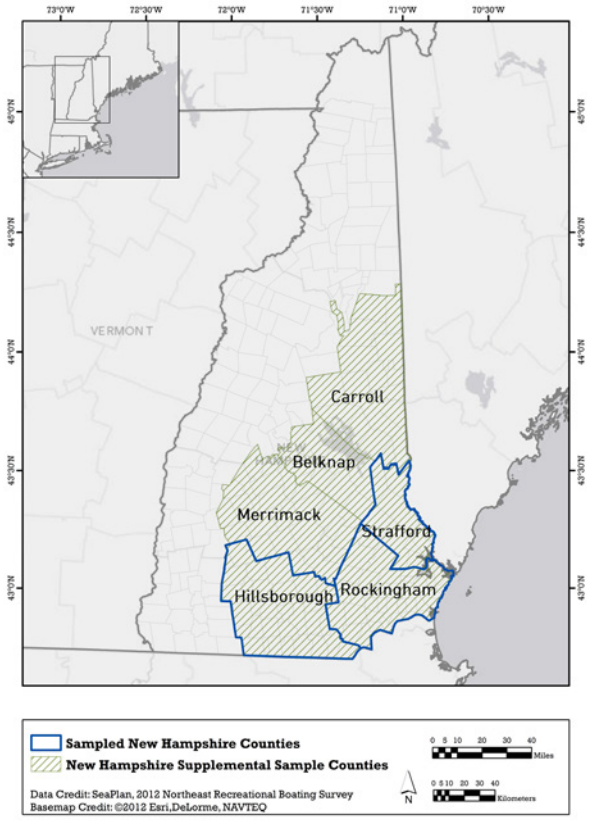


Figure 2: Map of Sampled New Hampshire Counties and Towns

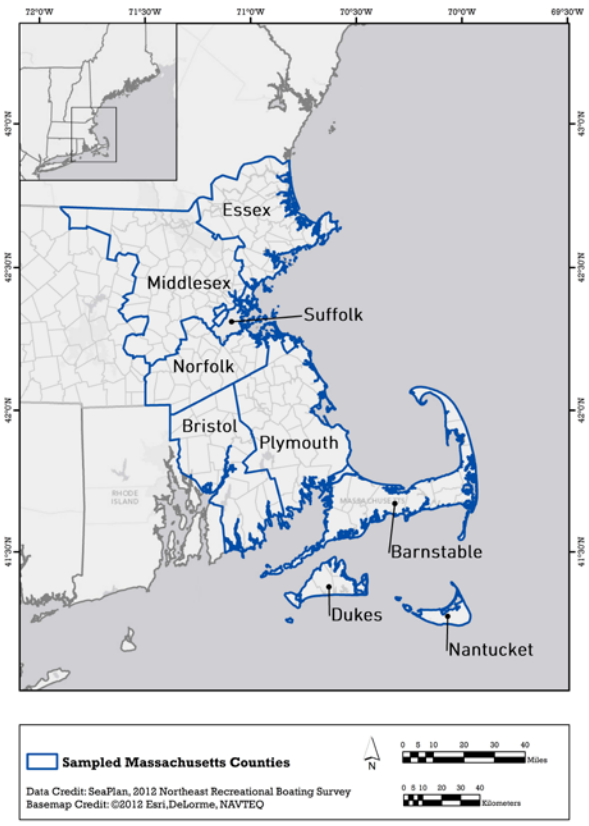


Figure 3: Map of Sampled Massachusetts Counties

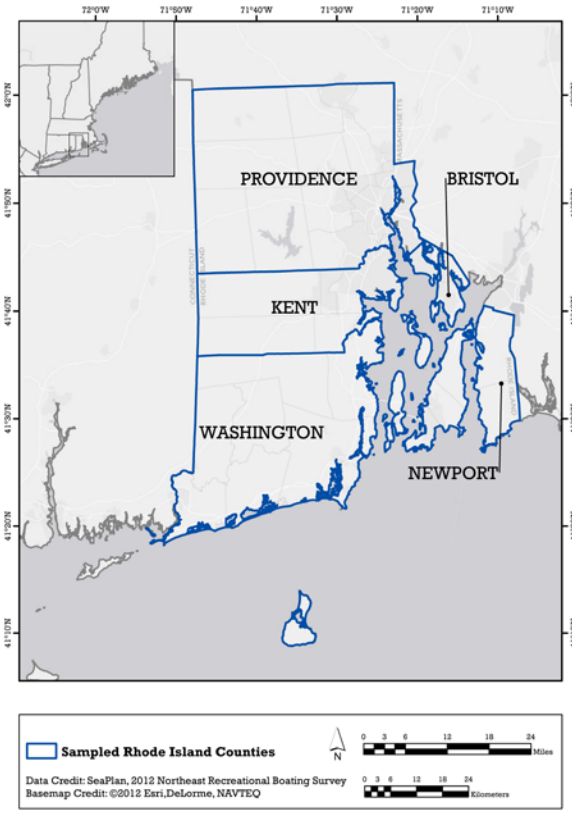


Figure 4: Map of Sampled Rhode Island Counties

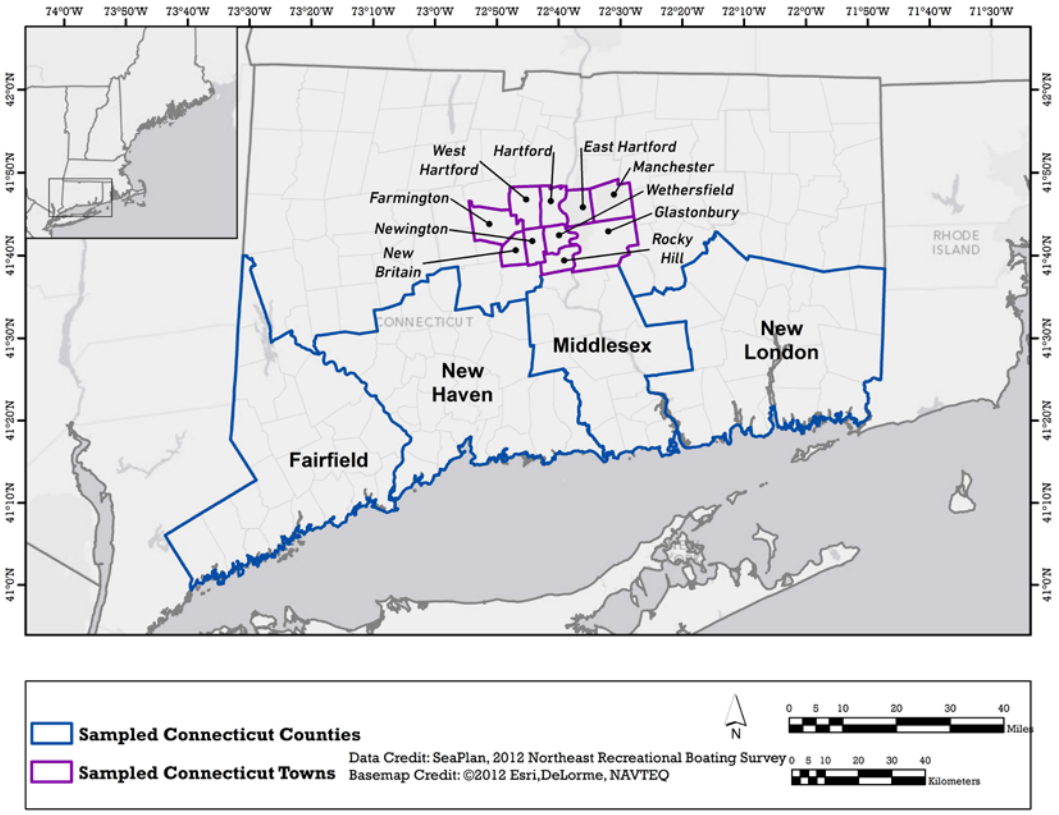


Figure 5: Map of Sampled Connecticut Counties and Towns

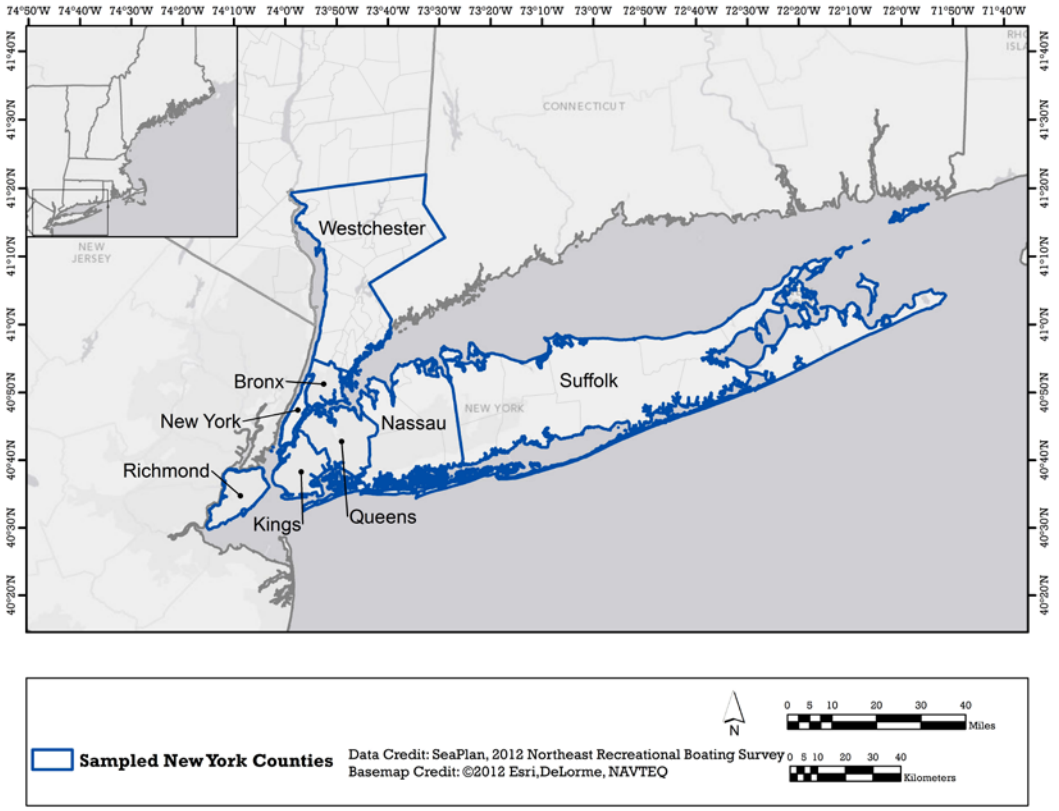


Figure 6: Map of Sampled New York Counties

After applying the four criteria to the state and documented vessel databases, the team determined that 373,766 boats were qualified for the survey. Table 3 shows the total number of qualified registered and documented boats per state, and by boat size classes.

Table 3: Qualified Boats Per State and Boat Size Class

Boat Length	ME	NH	MA	RI	CT	NY	Total
10-15 FT	11,608	12,558	30,963	9,372	20,117	27,575	**112,193**
16-25 FT	19,020	17,967	51,820	13,721	28,780	64,040	**195,348**
26-39 FT	3,795	1,647	15,239	4,044	10,026	23,495	**58,246**
More than 40 FT	463	122	2,146	684	1,914	2,650	**7,979**
TOTAL	**117,760**	**27,821**	**100,168**	**34,886**	**32,294**	**60,837**	**373,766**

Step 3: Develop the Sample of Boats

Based on the number of qualified boats, the statistical team selected a representative stratified regional random sample of boat owners from ME, NH, MA, RI, CT, and NY to invite to participate in the survey. In certain states (ME, NH, RI, CT), the team also selected a "population size" supplemental sample of boat owners to invite to participate.

Regional Random Sample: From the 373,766 qualified boats, the statistical team randomly selected 50,000 boat owners from the Northeast to invite to participate in the 2012 NE Survey. SeaPlan and our statistical team worked together to determine a sample size of 50,000 randomly selected boats based primarily on our experience with the 2010 MA Survey and anticipated response rates.

The team drew upon its experience conducting the 2010 MA Survey, whereby we sent invitations to 10,000 boat owners in Massachusetts and approximately 13% of the boaters invited were eligible[13] and willing to participate in the study. Based on response rates from the 2010 MA Survey, we determined that with a sample size of 50,000 boats for the New England region, we would expect approximately 14,000 completed surveys from across the six month surveying period. With approximately 14,000 completed surveys in this study, 95% confidence limits around such percentages would not be expected to exceed one percentage point. For example, if the estimated percentage for a specific question was 20%, then we would be 95% confident that the true percentage was between 19% and 21%. This is a quite narrow interval and one small enough to meet most analytical needs. These reported confidence limits take into account the sample design complexities such as stratification by state and oversampling of larger boats.

13 "Eligible" boaters used their boat in marine water for recreational purposes, and had an email address/access to the internet for the online surveys.

To ensure that the sample represented the whole population of marine boats in the Northeast, our statistical team stratified the sample based on the following two categories:

1. State: The sample included a proportional random sample of boats of qualified boats in each state. For each state, the random sample included approximately 13.4% of the qualified boats.
2. Size class: To ensure that the sample included all size classes of boats, the random sample included approximately 13.4% of the qualified boats in each size class.

Tables 4 and 5 display the breakdown of the randomly selected 50,000 boats by state and size class.

Supplemental Samples: To address large differences in the number of qualified boats among states, the team decided that certain states (ME, NH, RI and CT) with fewer qualified boats should also have a "population size" supplemental sample of boats (selected at random) in addition to the pure random sample. For example, Rhode Island had the fewest number of boats qualified for the survey. To collect enough data to calculate economic impact estimates and analyze spatial patterns, we supplemented the pure random sample in Rhode Island with additional boats. Some states also expressed interest in a larger sample for their own analyses, such as Maine that requested an additional 10,000 boats for their sample.

In addition, the team also developed a "large boats" (26 feet or longer) supplemental sample for each state. Because the 8,860 "26 feet or longer" boats selected for the pure random sample represent a small percentage of all qualified boats (17.7%), but may be responsible for a large amount of expenditures and interstate travel, the team added 1,772 (20% extra) "26 feet or longer" boats. The team selected these large boats across all six states, again in proportion to the number of large boats registered by state. Statisticians developed weights to use when analyzing the data to account for

Table 4: Random Sample Per State (Number of Boats)

State	Qualified Boats	Boats in Random Sample
NY	117,760	15,753
RI	27,821	3,722
MA	100,168	13,400
ME	34,886	4,667
NH	32,294	4,320
CT	60,837	8,138
TOTAL	**373,766**	**50,000**

Table 5: Random Sample By Boat Size Class (Number of Boats)

Size Class	Qualified Boats	Random Sample
10'-15'	112,193	15,008
16'-25'	195,348	26,132
26'-39'	58,246	7,792
40+'	7,979	1,068
TOTAL	**373,766**	**50,000**

stratification and over-sampling of particular strata (see Section 3.4.2 "Economic, Demographic and other Boating-related Data: Cleaning and Weighting" for details on weights).

Table 6 provides more details on the final sample, including the total number of boats (both the simple random sample and supplemental samples) selected for each state. In total, the final sample consisted of 67,772 registered boats.

Table 6: Final Sample to Invite to Participate in 2012 NE Survey – Including Random and Supplemental Sample (Number of Boats)

State	Random Sample	Supplemental Sample (Size)	Supplemental Sample (Large Boats)	Final Sample Total
ME	4,667	10,000	115	14,782
NY	15,753	0	699	16,452
RI	**3,722**	2,500	126	6,348
MA	13,400	0	465	13,865
NH	4,320	2,000	47	6,367
CT	8,138	1,500	320	9,958
TOTAL	**50,000**	**16,000**	**1,772**	**67,772**

Step 4: Recruit Boaters to Register for Online Surveys

In early May, SeaPlan mailed a survey invitation package (Appendix B: "Mailing to Recruit Boaters for Survey") to 67,772 randomly selected boat owners in the Northeast (ME to NY). The invitation package contained:

- Invitation letter: Individually addressed to the boat owner
- Frequently Asked Questions: Contained details about the survey
- Survey incentives details: To encourage boaters to participate and thank boaters for their time, we had numerous prize drawings throughout the boating season. Due to the considerable effort required for the survey, it was important to have a thorough list of incentives to reduce survey attrition. We developed an extensive outreach plan (Section 3.3 "Outreach") to solicit prizes from the boating community, ranging from cash prizes to boating supplies and services (for list of prizes, see Appendix C "Prize Donations").
- Registration instructions: Boaters had the following options to complete the survey:
  1. Fill out the enclosed Recruitment Survey and return it in the stamped, addressed envelope, or
  2. Fill out the Recruitment Survey online at www.neboatersurvey.org.

To track responses, we assigned each boat a unique identification number. While the criteria noted previously helped target boaters that would be eligible to participate, we asked a few additional questions through the Recruitment Survey to ensure boaters were eligible for the survey. The Recruitment Survey asked boaters if they:

- Currently own the selected boat;
- Have an email address and access to the internet during the boating season; and
- Use their boat in marine waters for recreational purposes.

We mailed the invitation package to boat owners in two waves (initial mailing in early May and a reminder mailing in early June).

Step 5: Administer Surveys to Boaters

The team asked participating boaters to complete a total of seven surveys (six Monthly Surveys and one End of Season Survey) throughout the course of the surveying period (May – October, 2012). To access the surveys, boaters received an email notification at the beginning of each month containing a link to the survey and information about the incentive prizes being offered for completing that survey (for email text, see Appendix D "Email Notification Text for Monthly Surveys"). The team sent emails and reminders based on the schedule in Table 7.

Table 7: Dates for Distributing Each Monthly Survey and End of Season Survey

Monthly Survey	First Email Date	Second Email Date (Reminder)
May	June 5th/7th	June 15th/18th
June	July 3rd	July 16th
July	August 1st	August 15th
August	September 5th	September 16th
September	October 3rd	October 19th
October & End of Season Survey*	November 8th	November 19th

* NOTE: Upon completion of the End of Season Survey, we asked boaters if they would be willing to complete a survey reporting on their October boating activity.

SeaPlan and partners modeled the surveys' design and questions on the 2010 MA Survey. To ensure the survey was an effective tool for gathering data on marine recreational boating activity, boating industry representatives, state and federal agency staff, and project team members tested the survey and provided recommendations on improving the tool. Below are additional details on the Monthly Survey and End of Season Survey.

Monthly Surveys: The Monthly Survey collected spatial data, economic data, and additional information (e.g., number of boat trips) on marine recreational boating activity that occurred during the previous month. The Monthly Survey questions were the same each month, with one exception. To address known increased boating activity during holiday periods and provide information on holiday boating patterns, surveys administered during months with major holidays (i.e., Memorial Day, Fourth of July and Labor Day) contained an additional question on whether the reported trip was taken during a holiday weekend. We anticipated the Monthly Surveys would take boaters, on average, 15 minutes to complete. The Monthly Survey consisted of two parts:

1. Questions (primarily focused on spending) about monthly boating activity and specific questions about the boater's last trip or visit to their boat of the month.[14] If the boater took a trip on the water that month, the boater was asked to report on that trip. If the boater did not take a trip on the water and only visited their boat while docked/moored, the survey asked the boater to report on the boat visit. Figure 7 includes the definitions of "trips" and "visits" provided to boaters.

   The study team decided that asking boaters to report on their last trip or visit made during the previous month was the best way to collect boating activity data for a number of reasons, including: A) asking about every trip/visit made during the month would have been burdensome to boaters; B) asking about a randomly chosen trip/visit made during the month would likely confuse survey respondents; C) asking about "any" trip or visit would have been bias as people will generally report on their most memorable/exciting/longest trip or their longest visit; and D) asking about the last trip/visit made was easiest for boaters to remember since it was most recent. Furthermore, asking about a "last trip/visit of the month" is an accepted methodology in survey practice to randomize responses and reduce bias.

> Trip: A "trip" starts when you launch or board your boat, embark on the water, and ends when you return to the place you started. The "trip" should include all the time you were away from your homeport including time on the water and time you spent in ports other than your homeport. Therefore, a trip might span several hours, several days or even several weeks.
>
> Visit: A visit would be when you went to your boat but did not take it anywhere. For example, you may have been carrying out maintenance on your boat or entertaining friends and family on board.

Figure 7: Definitions of "trip" and "visit"provided to boaters

14 This survey was administered through a Snap survey, which is a commonly used survey software system. For more information on Snap, see http://www.snapsurveys.com/.

The types of questions found in the Monthly Surveys fell into the following categories:

- General boating activity for the month (e.g., number of trips on the water, number of visits to the boat)
- Spending on the boaters' last on-water boating trip or last visit to the boat (e.g., spending on boat/car fuel, groceries, maintenance, lodging)
- Reason/purpose for last on-water boating trip (e.g., just cruising, fishing, swimming)

Figure 8 displays five questions asked during the Monthly Surveys, and Figure 9 shows a screen capture of one question in the survey questionnaire. See Appendix A for a complete list of Monthly Survey questions.

1. On how many different days during [MONTH] were you on your boat for recreation or maintenance?
2. Did you take your boat on a trip out on the water on any of these days aboard?
3. Did you trailer your boat to a launch site as part of this trip?
4. Approximately how much money did you and your party spend in each category below as part of the last "on water" boat trip on your boat in September? Include both spending in preparation for and during this specific trip.
5. Approximately what PERCENT of the total spending you have just listed occurred IN THE STATE where you launched or boarded your boat on this specific trip?

Figure 8: Five Example Questions from Monthly Surveys

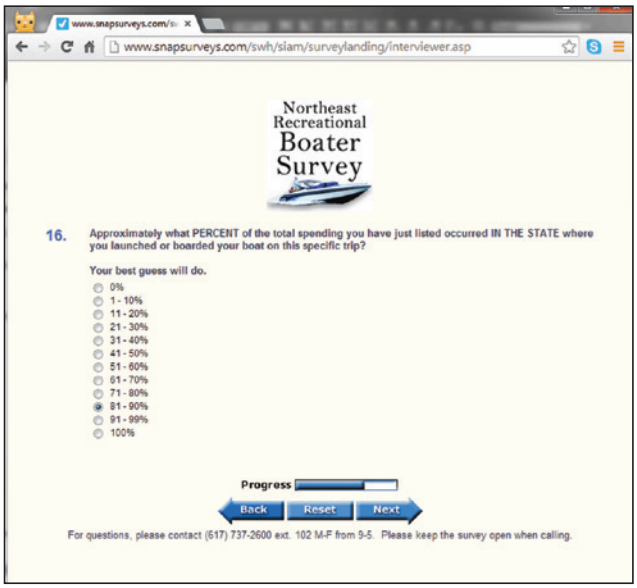
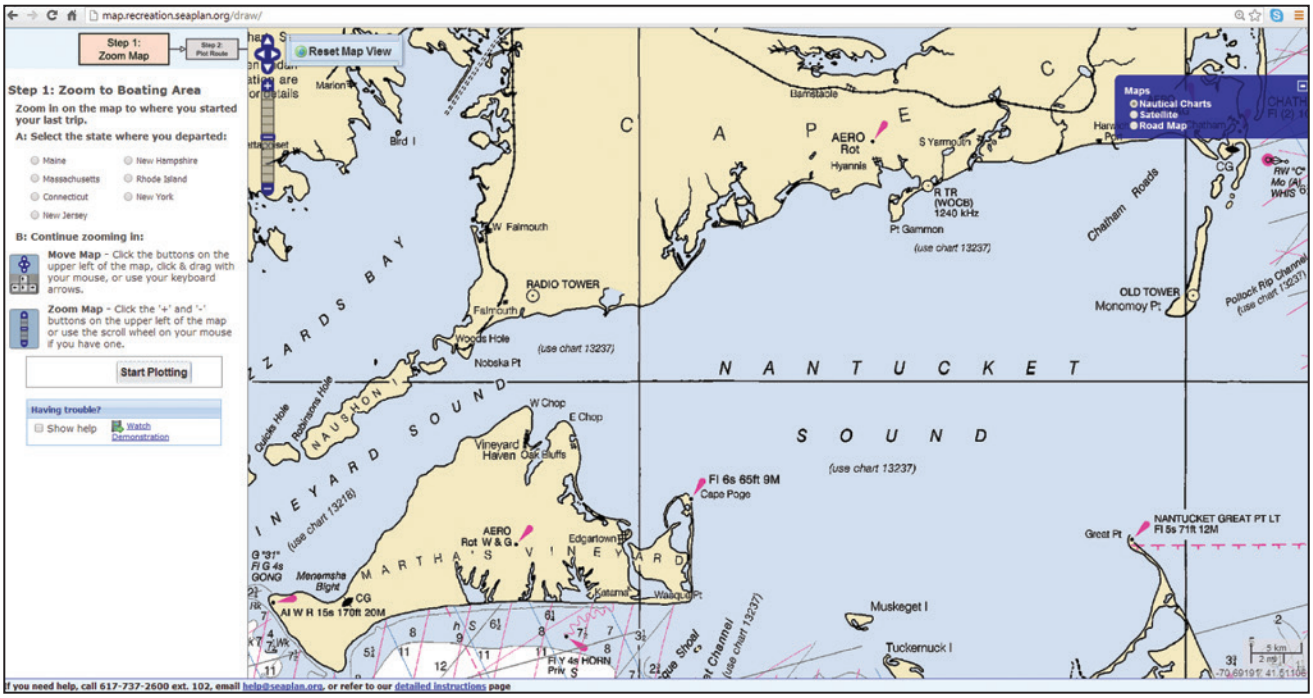


Figure 9: Snap Segment of Monthly Survey, Displaying One Question

2. Mapping application where boaters who took a trip plotted the following items:

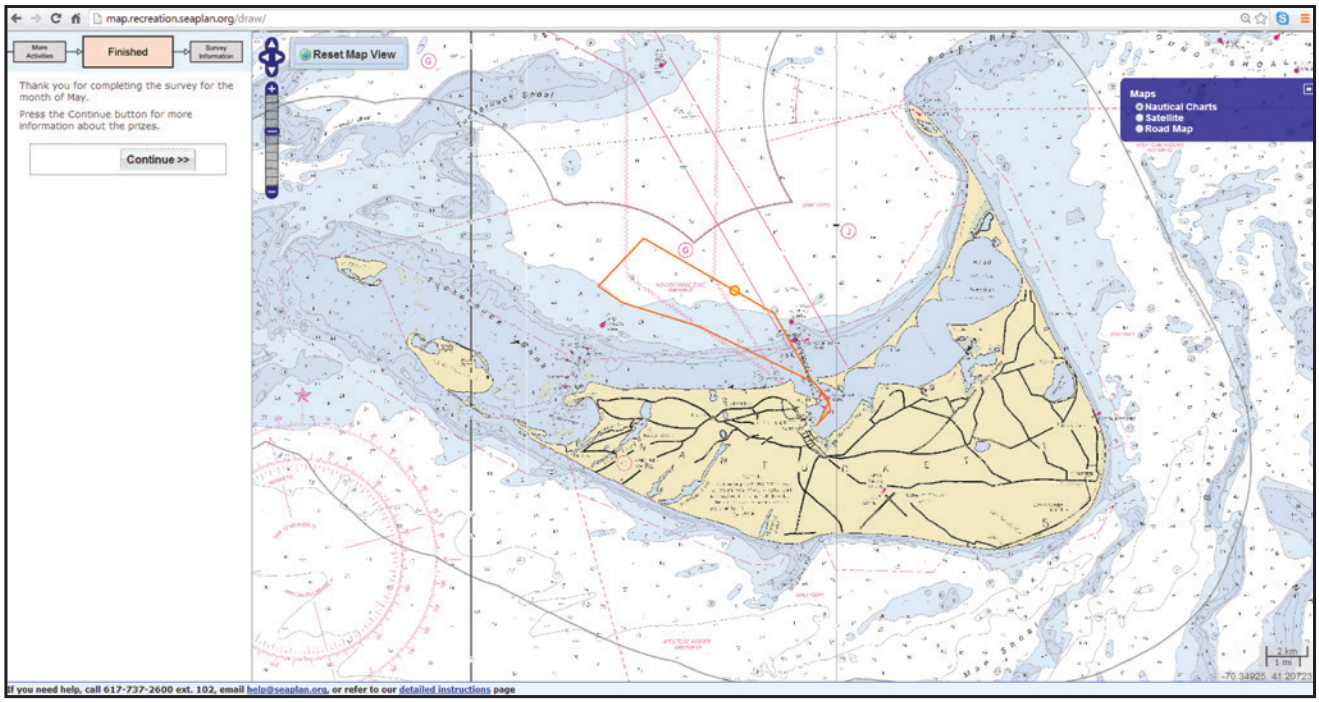
   - Last roundtrip boating route that the boater undertook during the previous month; and
   - Areas where they participated in activities during that trip. Activities could include:
     - Fishing
     - SCUBA diving
     - Swimming
     - Relaxing at anchor
     - Wildlife viewing
     - Other: additional activities while boating (e.g., wakeboarding, sightseeing)

See Figures 10 and 11 for pictures of the online mapping application, and see Appendix E "Details on the Mapping Application" for a complete description of the mapping application.



The basemap consists of NOAA nautical charts, but the user could switch the basemap to a Satellite or Road Map using the purple box in the upper right hand corner. The instruction/question panel is on the left, and zooming functions are in the upper left hand section of the map.

Figure 10: Mapping Application, Zoomed into Marthas Vinyard and Cape Cod, MA



Example of a roundtrip route (orange line) and one example activity point (orange circle) plotted off Nantucket Island, MA. In this example, the survey respondent plotted a round trip route from Nantucket harbor and identified a point along this route for which the respondent provided detailed information on what they did during their trip (e.g., fishing).

Figure 11: Online Mapping Application with Plotted Route and Activity Point

Open Survey

As a separate effort from the Monthly Surveys, the team also developed an "open survey" to collect additional spatial data from recreational boaters in the Northeast. The open survey was available in early July to all boaters in the Northeast who used their boats in marine waters for recreational purposes. The open survey collected additional spatial data, and provided a way to gather additional data from boaters who had not been selected to participate in the survey. Because this was not a random survey, the open survey did not collect economic data.

The state of New Jersey, while not within the study area, expressed interest in acquiring spatial information on boating activity through the open survey. The team worked with the New Jersey Marine Trades Association (NJ MTA) to provide New Jersey boaters with access to the open route mapping program, and SeaPlan provided NJ MTA with draft outreach materials for use in encouraging NJ boaters to participate.

The open survey allowed boaters to report on as many trips as desired throughout the boating season. The open survey consisted of two parts: 1) general boating activity questions administered through the Snap survey software, and 2) the mapping application where boaters plotted their most recent boating route and provided information on any boat-based activities, such as fishing and swimming. The questions asked during the Snap survey segment were slightly modified from the original survey questions, while the mapping section was exactly the same as the Monthly Survey mapping program.

We kept all information collected through the open survey separate from the random sample survey results, and the subsequent analysis does not include the open survey data. As this was a fairly small effort with only 70 boaters participating, the survey team developed two maps of the data gathered through the open survey, which can be found in Appendix I "Boating Data Collected through Open Survey".

The link to the open survey was located on the Boater Survey website (see Section 3.3 "Outreach" for more information on the website). We advertised the open survey through an announcement (see Appendix G "Announcement for Open Survey") which contained text that could be included in an e-newsletter or newspaper article. The flyer used to advertise the entire 2012 NE Survey effort also included information about the open survey (see Appendix H: "Flyer Advertising 2012 NE Survey").

End of Season Survey: The End of Season Survey was administered together with the last Monthly Survey (October) and gathered a variety of information pertaining to yearly boating activity and expenditures throughout 2012 as well as boaters' opinions on key boating topics. The End of Season Survey contained three categories of questions:

1. Yearly boating-related expenditures: Questions on yearly related expenditures (i.e., expenditures not captured in the Monthly Surveys). These include spending on dockage, storage, taxes, yearly maintenance, and other items.
2. Survey feedback: Questions about the boater's general experience with participating in the survey, whether the survey was easy or difficult to use, and any general comments and questions about the survey.
3. Boater's Opinions: Measuring boater's opinions on topics of interest in the region, such as ocean planning issues (e.g., boater's opinions on the compatibility of different ocean uses and boating) and safety.

The team developed the questions with input from our survey partners, including the recreational boating industry. Figure 12 contains five examples of questions found in the End of Season Survey, and Appendix F "End of Season Survey Questions" contains the complete list of End of Season Survey questions.

1. In the LAST 12 MONTHS, did you spend any money on equipment, maintenance and repair of your boat in any of the following categories? When entering cost in dollars, please estimate to nearest $10. You do NOT need to enter a dollar sign ($).
2. Approximately what PERCENT of the total spending you have just listed in the previous THREE questions occurred IN THE STATE where your boat is registered?
3. How would you rate your boating activity on your boat in 2012 compared to other years?
4. What is your major safety concern on the water? Check all that apply.
5. Sometimes boating can occur near other activities. In your opinion, how likely is it that you can continue to enjoy boating near the following structures or activities? (Offshore Wind Farm Turbines, Ship/tanker/ferry traffic, port operations and industrial waterfront, aquaculture (finfish and shellfish farming), commercial fishing, recreational (sport) fishing, conservation and marine protected areas (e.g., sanctuaries).

Figure 12: Five Example Questions from End of Season Survey.

3.3 Outreach

Outreach to partners and stakeholders was an important aspect of every phase of the 2012 NE Survey, including survey design, survey implementation, and data analysis and interpretation. To conduct outreach about the survey, SeaPlan staff, with assistance from partners, designed a survey communication strategy to achieve four primary objectives:

1. Engage marine industry representatives and state coastal planners in the design and implementation of the survey to garner direct or in-kind support; 2010 Massachusetts Recreational Boater Survey
2. Encourage recreational boaters to participate in the survey;
3. Facilitate the survey process for participants and encourage continued participation throughout the boating season; and
4. Engage with marine industry representatives and state coastal planners to analyze and review data collected through the survey.

This chapter outlines the activities to implement this communication strategy including brand development, electronic mass communication, print and display material production, sponsorship program implementation, social media activity, partner outreach, network development and mass media engagement. The chapter concludes with tables of communication outputs and outcomes and major outreach activities, including date of activity, communication outlets, target audience and outreach objectives addressed by each activity.

3.3.1 Engage Marine Industry and Coastal Planners in Survey

To engage the marine industry and state coastal planners in the design and implementation of the 2012 NE Survey, SeaPlan distributed outreach materials and spoke with boaters and boating industry representatives at a number of venues. The outreach materials and activities consisted of:

A. Announcements: To inform the marine industry and coastal planners of this effort, SeaPlan distributed the 2012 NE Survey announcement (see Appendix J "Announcement for 2012 NE Survey") to coastal zone management programs and other partners in the region for inclusion in their newsletters. Partners who ran the announcement included MA CZM, NH Coastal Program, Maine Coastal Program, Piscataqua Region Estuaries Partnership, Sailors for the Sea and Mass Audubon. SeaPlan and partners also developed one-page flyers and distributed them at boat shows and marinas for posting on bulletin boards (see Appendix H).

B. Sponsorship Program: SeaPlan developed an extensive sponsorship program to engage the boating industry and secure incentive prizes for survey participants. Through the sponsorship program, we solicited prizes from the boating community, ranging from cash prizes to boating goods and services (for list of prizes, see Appendix D). We advertised the sponsorship program at the New England Boat Show

and through presentations (e.g., presentation at the MMTA meeting), and a number of organizations generously donated prizes for the raffles in return for advertisement 1) on our Boater Survey website and 2) through the Monthly Survey email notifications to survey participants (see Appendix D for example of advertisement through email notifications).

C. Social Media: SeaPlan established a Linked In Group targeted for professionals for the 2012 NE Survey that included posts about survey announcements, reminders for monthly surveys and "Boater Survey News".

D. Presentations at Meetings: SeaPlan staff presented at a number of meetings to spread the word about the survey. For example, on March 5, 2012, SeaPlan staff presented on the 2012 NE Survey at a board meeting of the Massachusetts Marine Trades Association in Quincy, MA. Industry leaders from MMTA provided feedback on survey framework.

E. Boat Show Booths: SeaPlan hosted a booth at two boat shows: the 2012 New England Boat Show (attended by 44,051 visitors) in Boston, MA from February 11 – 19, 2012, and (in coordination with the Maine Coastal Program) Maine's Boating Expo produced by Maine Marine Trades Association in Brunswick, ME on April 14, 2012 (attended by 1,000 visitors). The booth (Figure 13) included banners surrounding a table with survey flyers, postcards, branded key floats used as engagement incentives (Figure 14) and sponsorship information. Through interacting with visitors at the shows, SeaPlan spread the word about the survey and developed a database of marine businesses and contacts that resulted in 341 businesses and 175 other contacts.

F. Development of a neutral logo to establish consistent branding when promoting the NE Survey (Figure 15).

3.3.2 Encourage Boaters to Participate in Survey

SeaPlan encouraged boaters to participate by increasing awareness about the survey effort. To increase boater awareness, SeaPlan distributed outreach materials with details about the survey, and established a presence through social media and boating forums. More details are below:

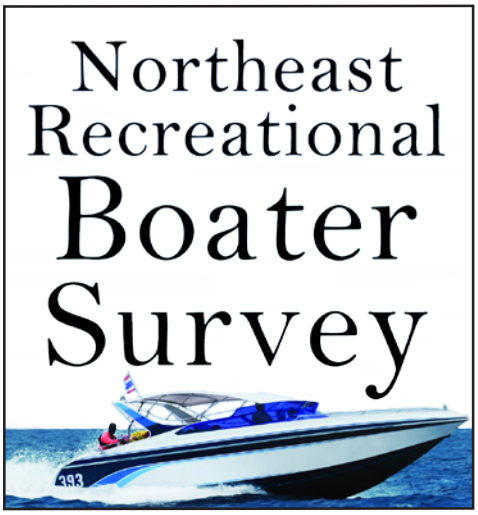
A. Press release: To spread the word about the survey and encourage boaters to participate, SeaPlan developed a press release (Appendix K "Press Release for 2012 NE Survey") and circulated it to 82 national, state and local newspapers, including the Associated Press (AP). Two newspapers and the AP picked up the story. The AP published an article entitled, "Huge Survey Aims to Get Read on Northeast Boating," on May 19th which resulted in more than 200 outlets reposting the story worldwide (Appendix L "Example of News Article on 2012 NE Survey"), including the Wall Street Journal and Bloomberg.

B. Billing insert: As requested by several industry representatives, SeaPlan developed an 8.5" X 3" billing insert encouraging participation in the survey to be included in invoices or other mailings sent to boaters by marinas. See Appendix M "Billing Insert Advertising 2012 NE Survey".

Figure 13: SeaPlan booth with 2012 NE Survey Information at 2012 New England Boat Show in Boston.

Key floats were distributed at boat shows to encourage survey participation.

Figure 14: Key Floats



The logo was a consistent feature on all outreach materials designed to provide consistent branding.

Figure 15: 2012 NE Survey Logo.

C. Social Media: SeaPlan established Facebook, and Twitter accounts for the 2012 NE Survey that included posts about survey announcements, reminders for monthly surveys and "Boater Survey News."

D. Boating Forums: SeaPlan staff participated in several online boating forums to encourage participation and answer questions. A number of forums agreed to donate advertising space for the survey including: Boating ABC.com; Northeast Boater; Boat Name Blog; Daily Boater; BoatBoss.com and First Boat.

3.3.3 Facilitate Survey Process

During the surveying period, SeaPlan communicated with survey participants and partners about survey progress and any noteworthy updates. The intent of these updates was to encourage boaters to continue participating in the survey and keep partners informed. SeaPlan used the following outreach venues for this communication: the 2012 NE Survey website, newsletters, and direct emails to survey participants. See below for details.

A. 2012 NE Survey Website: SeaPlan established a website to support the survey at www.neboatersurvey.org, which was designed as the hub for online survey information. The team launched the website in March 2012, and included detailed information on the survey, survey sponsors, survey partners, as well as the list of monthly and grand prize incentives with links back to sponsor webpages. The site was also the landing page for participants submitting surveys throughout the year.

B. "Boater Survey News" Newsletters: To regularly communicate with survey partners and participants during the survey, SeaPlan developed "Boater Survey News", an e-newsletter that included important survey announcements, incentive prizes descriptions and sponsor recognition (see Appendix N "Example of Boater Survey News from December 2012. The team invited all survey participants to sign up for the e-newsletter and 187 boaters subscribed.

C. Emails to Survey Participants: Each month, an email was sent to all survey participants reminding them to complete the monthly survey and notifying them of the incentive prizes for the month. Emails were also sent one week later.

A summary of all outreach activites can be found in Table 8 and 9.

Table 8: Materials, Activities and Media Associated with Outreach Outputs and Outcomes

Materials or Activities	Output*	Outcome
Draft Scopes and Presentations	Meetings, webinars and presentations to state coastal managers and industry representatives	Final survey scope and design
Press Release/Media Engagement	Sent to 82 releases to media outlets in NE	> 200 stories/posts in worldwide media
Announcement	Sent to six state CZM programs, five MTAs, and three partners	>2,000 people on partner lists received the announcement.
Flyers and Billing Inserts	Sent to six state CZM programs and five MTAs	unknown
Social Media	Established Survey Facebook, Twitter and LinkedIN accounts.	Facebook : 41 likes; Twitter: 135 followers; LinkedIN: 3 members
Boater Survey News (newsletter)	Sent five editions of Boater Survey News (April, May, June, July& Dec) to list of subscribers	187 people subscribed to the newsletter
Boat Show Booths	SeaPlan staffed a bother at the New England Boat Show and Maine Boat Show.	>20,000 exposed to the survey
Industry Webinars and Meetings(data and analysis vetting)	Held six webinars and five meeting in each state to discuss survey findings with industry leaders and coastal management staff	> 80 participants reviewed survey data and provided feedback
Industry Sponsorship Program	Phone calls and emails seeking sponsorship or in-kind support from boating industry to conduct survey	16 organizations sponsored the Survey at various levels
Boater's Log(Post Survey Outreach)	Added recruitment question on End of Season Survey	403 boaters signed up

*an outreach output is an event or item produced or sent, such as the number of press releases sent to media. An outreach outcome is the impact the outreach item had, such as 200 news stories published.

Table 9: Major Communication Activities for the 2012 Northeast Recreational Boater Survey

Date	Activity	Outlet	Primary Audience	Content Source	Outreach Objectives*			
					1. Recruit	2. Engage	3. Facilitate	4. Vetting
2/11 – 2/19/12	booth	New England Boat Show - Boston, MA	Boaters & Boating Industry	SeaPlan	x	x		
2/16/12	presentation	Social Coast Forum	Coastal Managers	SeaPlan		x		
3/6/12	website	www.neboatersurvey.org	All Stakeholders	SeaPlan	x	x	x	
3/13/12	post	MassBaySailors Yahoo Group	Boaters (sailors)	SeaPlan	x			
3/19/12	post	Yack On	Nantucket Boaters	SeaPlan	x			
4/18/12	announcement	RI CRMC	Coastal Managers	RIDEM		x		
4/25/13	article	The Wire (NH)	Boaters	SeaPlan	x			
5/1/12	mass email	MMTA list	Boaters	MMTA/SeaPlan				
5/2/12	announcement	MA CZ-Mail	Coastal Managers	MA CZM		x		
5/3/12	post	Sailors for the Sea (website)	Boaters	Sailors for the Sea/SeaPlan	x	x		
5/10/12	news release	NHDES media Center	Subscribers: Boaters & Boating Industry	NH Coastal Program	X	x		
5/11/12	announcement	Beacon Hill Weekly Roundup	Coastal Managers	Mass Audubon		x		
5/12/12	e-newsletter	Boater Survey News	Coastal Managers	SeaPlan		x	x	
5/15/12	post	Freedom Boat Club, NH Blog	Boaters	SeaPlan	x	x		
5/18/12	forum	BoatingABC	Boaters	SeaPlan	x			
5/19/12	article	Associated Press (AP)	All Stakeholders	AP/SeaPlan	x	x		
5/19/12	repost	Wall Street Journal, Bloomberg Business	All Stakeholders	AP	x			
5/19/12	forum post	Safe Boaters of NH	Boaters	NH Coastal Program	x			
5/19/12	repost	FishFarm.me	Aquaculture	AP		x		
5/19/12	repost	Yahoo Finance, MSN Money, CBS News, CNBC	All Stakeholders	AP	x			
5/19/12	repost	Bangor Daily News, myFoxNY	All Stakeholders	AP	x			
5/21	e-newsletter	Piscataqua Region Estuaries Partnership	Boaters; Coastal Managers	SeaPlan	x	x		
6/8/13	post	New England Boating	Boaters	TradeOnly.com				
5/30/12	e-magazine	BoatingIndustry.com	Boating Industry	AP		x		
6/1/12	post	OutdoorHub.com (website)	Boaters	Multiple	x	x		
6/4/12	e-magazine	Trade Only Today	Boating Industry	SeaPlan	x	x		
7/14/12	e-newsletter	Boater Survey News	Survey participants & partners	SeaPlan		x	x	
8/09/12	e-newsletter	Marine Trades Association of NJ e-newsletter	NJ Boaters & Boating Industry	MTA of NJ	x			
8/09/12	news release	NJ media	All Stakeholders (NJ)	MTA of NJ	x			
8/16/12	forum	BassBarn.com	NJ Recreational Fishermen	NJ Sea Grant	x			
8/16/12	forum	NJFishing.com	NJ Recreational Fishermen	NJ Sea Grant				
9/21/12	post	Open Channels	Coastal Managers	SeaPlan		x		
9/26/12	meeting	CT Boating Advisory Council	Coastal Managers, Boating Industry	SeaPlan		x		
10/3/12	e-newspaper	Sentinel	Boaters	SeaPlan	x	x		
3/29/13	e-newsletter	Boater's Log	Boaters	SeaPlan		x	x	
4/1/2013	workshop	Massachusetts	Industry & Coastal Managers	SeaPlan/NROC				x
4/3/2013	workshop	Connecticut	Industry & Coastal Managers	SeaPlan/NROC				x
4/16/2013	workshop	New Hampshire	Industry & Coastal Managers	SeaPlan/NROC				x
4/18/2013	workshop	Maine	Industry & Coastal Managers	SeaPlan/NROC				x
4/23/2013	workshop	Rhode Island	Industry & Coastal Managers	SeaPlan/NROC				x

*Outreach Objectives were 1) recruit recreational boaters to participate in the survey, 2) engage marine industry representatives and state ocean managers in the survey and garner direct or in kind support, 3) facilitate the survey process for participants and 4) vetting data and analysis with marine industry representatives and state coastal planners.

3.3.4 Engage Industry and State Coastal Planners in Post-Survey Analysis and Review of Data

SeaPlan and NROC engaged the boating industry and state coastal planners in analyzing the data collected through the survey to ensure proper characterization of the results. This engagement also served the secondary purpose of gathering information on issues of importance to the boating industry to support regional ocean planning efforts. The engagement occurred in two parts: phone interviews with industry leaders and in-person workshops (some sponsored by industry representatives), as detailed below:

1. Interviews: In January and February 2013, SeaPlan and NROC conducted phone calls with industry representatives and state coastal/ocean planners from each state in New England. SeaPlan and NROC conducted five telephone interviews in total. One to three industry representatives from each state participated in the phone calls. The purposes of the phone calls were to:
   - Provide an update on regional ocean planning efforts;
   - Gather initial feedback on the draft 2012 NE Survey results;
   - Discuss issues of importance to the recreational boating industry that could be addressed through ocean planning efforts; and
   - Gather recommendations (e.g., date, location, agenda topics, organizations to invite) for convening in-person workshops in the spring, 2013 with a larger group of industry representatives.
2. Industry Workshops: Building on the information collected through the phone calls, the team conducted five in-person workshops in April 2013, consisting of one workshop in each New England coastal state (ME, NH, MA, CT, RI).[15] Eighty industry representatives participated in these workshops. See Table 10 for details on each state's workshop. The purposes of these workshops were to:
   - Provide an update on regional ocean planning activities;
   - Review and gather feedback on the draft results of the 2012 NE Survey; and
   - Discuss issues affecting the recreational boating industry and which could be addressed through ocean planning efforts.
3. See "Recreational Boating Industry Engagement in New England: Summary of Discussions with Industry Representatives on Ocean Planning and the 2012 Northeast Recreational Boater Survey Results, 2013" for a complete summary of the phone interviews and workshops.
4. Post Survey Outreach and Communication - Boaters' Log: At the end of the 2012 NE Survey period, SeaPlan invited boaters to extend their involvement in the survey process and participate in a Boaters' Log, which is a forum for survey participants to share boating stories and/or pictures. The purpose of the forum was to provide more information about boating in the Northeast and help illustrate concepts in reports and presentations with boater quotes and images.
5. Of the 2,054 boaters that completed the end of season survey, 403 agreed to participate in the Boaters' Log. Boaters' Log participants provided stories and images for use in reports and presentations, and continues to be a valuable resource for communicating about the survey.

Table 10: Date, Time, Location, and Number of Participants for Each State's Workshop

Logistics	MA	CT	NH	ME	RI
Date	4/1/2013	4/3/2013	4/16/2013	4/18/2013	4/23/2013
Time	1:30 pm–3:30 pm	3:00 pm – 5:00 pm	1:00 pm – 3:00 pm	8:30 pm – 10:30 pm	2:00 pm - 4:00 pm
Location	Quincy, MA	Essex, CT	Portsmouth, NH	Brunswick, ME	Providence, RI
Number of Participants	18	15	11	12	24

3.4 Data Cleaning, Weighting and Analysis

This section explains how the team cleaned, weighted and analyzed the raw data collected through the survey, divided into the following subsections: 3.4.1. geospatial data, and 3.4.2. economic and demographic data.

3.4.1 Geospatial Data: Cleaning and Analysis

The spatial data were collected through a mapping application detailed in the previous section. Through this application, survey participants plotted routes and identified their activity points on a map using a World Geodetic System (WGS) 1984 coordinate system. We imported these data into Excel, then into ArcMap v. 10.1, using a data frame in the WGS 1984 coordinate system, creating a vector line shapefile containing all the raw routes and a vector point shapefile containing all the raw activity points. From these baseline datasets, we created spatial datasets depicting boater routes, boater activities and a boater route density.

15 The team may convene a webinar or in-person workshop with NY marine industry representatives in late 2013.

Boater Routes: The shapefile containing raw boater routes required initial data cleaning to exclude routes or portions of routes that were drawn in error over land. To do this, we created a regional ocean vector polygon shapefile using a NOAA medium resolution shoreline shapefile and rectangular polygon encompassing all northeastern waters. We used this regional ocean polygon to extract the routes or route segments that were drawn over water, discarding the routes drawn over land. In the regional maps, only the routes from the regional random sample are displayed so that route density can be compared among states. Route maps shown at the state scale include both routes from the regional random sample and supplemental sample.

Activity Points: The activity points shapefile was cleaned in the same way described above, using the regional ocean polygon shapefile to extract points drawn within the area of interest. When survey participants plotted their activity data, they were able to choose which activities took place at a point, and, in some cases, could make further specifications about that activity, such as fish species that were targeted or type of wildlife that was being watched. Because of the quantity of data included in each data point, we created three separate activity point maps from this dataset. One map depicts the activity types (fishing, swimming, relaxing, SCUBA diving, wildlife viewing and other) at each point. The other two maps depict fishing and wildlife viewing activities more specifically, indicating the target species for each activity point. To account for the fact that multiple activities or species could occur at a single point, these points were visualized using pie chart symbology at each point. While the visualized points are not pie charts in the true sense of the term as they don't show the relative proportion of activities taking place at each point, they address the fact that multiple activities might take place at a single point, and highlight when these activities occur in conjunction with one another.

Route Density: Our approach to the route density layer was modeled after the analysis used in the 2010 MA Survey. We met with representatives from NROC, Massachusetts Office of Coastal Zone Management (MA CZM) and Maine Coastal Program to adapt this approach to a regional level, ultimately deciding that the grid resolution and analysis neighborhood (described below) used in the 2010 analysis would also be appropriate at the regional scale. Applied Science Associates (ASA) provided input on how to best analyze route data that spans multiple Universal Transverse Mercator (UTM) coordinate system zones.

To create the boater route density raster, we started with the raw boater route dataset. This dataset had not been cleaned to exclude routes over land. Using an attribute query, we selected the routes from the regional random sample from the dataset, excluding the routes from the supplemental sample, in order to perform a more statistically sound analysis. We then projected these into two separate shapefiles, one in the UTM 18 coordinate system and one in UTM 19 coordinate system. It was necessary that these data be in a projected coordinate system for the following analysis to give accurate results, and the UTM coordinate system minimizes distortion, allowing for accurate distance measurements.

To create a route density map, we used the line density tool with a 250 m square grid cell and a 675 m neighborhood. This means that the routes were summed in 250 m cells, summing both the length of routes within each cell in addition to the length of routes in a 675 m radius surrounding each cell. We included a 675 m neighborhood to account for the fact that users mapped their routes over NOAA nautical charts covering a range of map scales, as there was a range of accuracy in terms of the mapped routes. The smallest-scale chart used in the tool had an accuracy of approximately 675 m. By incorporating a neighborhood radius, we are assuming that when a boater marks a route, the actual location of the vessel on that route may have deviated slightly from that plotted route.

The line density analysis resulted in a raster grid for each UTM zone. We clipped each raster by the boundaries of its UTM zone, re-projected each raster into the North American Albers Equal Area Conic Projection, and the separate rasters were mosaicked together. At the boundary of the two raster grids there was a line of cells with no data value. This was a result of mosaicking rasters that originated in different coordinate systems. To approximate values in the blank cells, we populated each blank cell using the focal statistics tool. The focal statistics expression took the mean of all cells in a 4x4 neighborhood around each blank cell. We log-transformed the data to normalize the distribution and used the raster calculator to convert all of the log-transformed density values in the raster to Z-scores using the equation shown in Figure 16.

$$Z - score = \frac{value - mean}{standard\ deviation}$$

Figure 16: Equation used to Convert Density Values to Z-scores

We clipped this layer again using a regional ocean shapefile described above. The final route density raster dataset and resulting map depicts these Z-scores, which highlight areas of higher than average and lower than average boating activity.

3.4.2 Economic, Demographic, and other Boating-Related Data: Cleaning and Weighting

Data Cleaning: The surveys gathered a wide range of data on boating activity, the spending associated with boating activity, and boaters' opinions on boating-related topics. To ensure boaters provided logical answers, the survey programmers were able to control the responses provided by boaters to certain questions in the survey. For example, when asked how many days during the month of May the boater visited his/her boat, the boater could not provide a number larger than 31 since there are 31 days in the month of May.

While there were some mechanisms in place to ensure boaters provided logical responses, the statisticians still needed to flag and address any data anomalies or illogical responses. More specifically, the statisticians examined the data for inconsistencies, mostly caused when respondents backtracked in the questionnaire and changed answers.

Weighting of Data: As previously discussed, the data resulting from these surveys were the direct result of a complex sample involving stratification and over-sampling of particular strata (See Section 3.2 "Developing Survey Population and Administering Surveys"). This stratified design was necessary to target boat owners who were qualified to participate. Without the stratified design, survey ineligibility rates would have been higher and survey would have collected less data. The net result of this stratification was variable probabilities of selection for boat owners depending on region and size of boat. It is necessary to take into account these variable probabilities when analyzing survey data.

To adjust both for the variable probabilities of selection and for differential survey non-response by stratum, we placed weights on every survey response. The weights developed for analysis purposes reflect the initial probabilities of selection from within each state and boat size classes of under 26 feet and 26 feet or larger. They also adjust for survey non-response. The weights, in other words, adjusted the distribution of boats in the analytic data files to resemble more closely the distribution in the original databases by region and size.

3.4.3 Economic Data: Analysis

The economic analysis included three parts:

1. Number of Trips and Visits: Estimating the total number of boating trips taken and visits made by boaters from the study area in 2012 using Monthly Survey responses.
2. Boater Expenditures in 2012: Estimating total spending by these boaters, both by state and within the region as a whole in 2012.
3. Regional Economic Impacts: Estimating the impact of these expenditures on the region's economy (including direct, indirect, and induced impacts) using Impact analysis for PLANning (IMPLAN) model.

Additional information on each element of this approach is provided below.

Number of Trips and Visits

To estimate the total number of boating trips taken and visits made by marine boaters from the study region, it was necessary to extrapolate from the results of the survey to the broader population it is designed to characterize. This process assumes that those who responded to the survey are representative of the boater population as a whole. As noted previously, statisticians determined the appropriate scaling factors, or weights, to be applied in the extrapolation process. Figure 17 illustrates the application of these scaling factors to estimate the total number of boating trips taken and visits made by the broader population of boaters from the six-state region.

Boater Expenditures in 2012

After calculating the number of trips and visits, economists extrapolated from the results of the survey to estimate annual boating expenditures for the population as a whole. We estimated expenditures as follows:

- By state, separately calculating in-state and out-of-state expenditures;
- By category (i.e., trip, boat visits, and yearly expenditures[16]);
- By type (e.g., boat fuel, groceries).

The Monthly Survey asked boaters about expenditures for their last trip or visit taken during the previous month. Because trips and visits can last more than one day, we adjusted the expenditure estimates for trips and visits to report expenditures per trip-day and visit-day. We then multiplied the per-day estimates by the number of trip- or visit-days that boaters reported in a month to arrive at monthly expenditure estimates (see Figure 18). This approach assumes that the respondent's last trip or visit is representative of other trips and visits taken that month.

16 Yearly expenditures include boaters' spending that is not associated with a boat trip or visit (e.g., storage, docking, taxes, insurance).

1. Total number of trips for each survey response: Q5
2. Total number of visits for each survey response: Q3 minus Q5
3. Weighted number of visits and trips: [a]
   A. $Trips_{weighted}$ = (#Trips) * (MERGWT/6)
   B. $Visits_{weighted}$ = (#Visits) * (MERGWT/6)
4. Total number of trips and visits:
   A. Sum of $Trips_{weighted}$
   B. Sum of $Visits_{weighted}$

[a] The weights (MERGWT) scale the results of each Monthly Survey to the population the respondents represent. Because we are aggregating survey results across six months, we divide the survey weights by six.

Figure 17: Calculations to Determine Number of Boat Trips and Visits

1. Per-day trip and visit expenditures by type: Q9 & Q15 (trip), Q21 & Q22 (visit) [a]
   A. Per-Day Trip Expenditures by Type = (expenditures by type)/(nights away from residence on last trip + 1)
   B. Per-Day Visit Expenditures by Type = (expenditure by type)/(nights away from residence on last visit + 1)
2. Weighted trip and visit expenditures by type
   A. $TripExpenditure_{Weighted}$ = (Tripsweighted)*(per-day trip expenditures by type)
   B. $VisitExpenditure_{Weighted}$ = (Visitsweighted)*(per-day visit expenditures by type)
3. Total expenditures for trips and visits
   A. Sum of $TripExpenditure_{Weighted}$
   B. Sum of $VisitExpenditure_{Weighted}$

[a] Because respondents reported nights away, we assume that the number of days on trips or visits is one more than the number of nights.

Figure 18: Calculations to Determine Boat Trip and Visit Expenditures.

The End of Season Survey asked boaters about yearly related expenditures over the entire boating season (e.g., storage, docking, taxes, insurance). Responses to these questions are scaled to the broader population using weights developed by the statisticians (see Figure 19).

After calculating total expenditures, we distribute expenditures by state and aggregate the results (see Figure 20).

1. Weighted non-trip expenditures by type (Q1,Q2,Q3).
    A. Non-TripExpenditureWeighted = [(expenditures by type)*(MERGWT)]
2. Total non-trip expenditures
    A. Sum of Non-TripExpenditureWeighted

Figure 19: Calculations to Determine Yearly Expenditures

1. Percent of expenditures that occurred in-state:
    A. Trip: Q12b and Q16 (Monthly Survey).
    B. Visit: Q19b and Q23 (Monthly Survey).
    C. Non-Trip: Q0 and Q4 (EOS survey).
2. Percent of expenditures that occurred out-of-state (OOS):
    A. OOS = 1 - [fraction of in-state spending]
3. Location of out-of-state expenditure:
    A. Trips: Q17 (Monthly Survey).
    B. Visits: Q24 (Monthly Survey).
    C. Non-Trip Related: Q5 (EOS survey).
4. Attribution of out-of-state expenditures
    A. Assume that all states positively identified by the respondent as a location of out-of-state spending received an equal share of the out-of-state spending identified by that respondent.

[1] Responses to Q16, Q23, and Q4 are reported as a range (e.g., 1-10 percent). The percentage of spending that occurred "in-state" is assumed to be the mid-point of the range identified by each respondent.

Figure 20: Calculations to Determine In-State and Out-of-State Expenditures

Regional Economic Impacts

The study estimated the economic effects of boating expenditures in the Northeast using an IMPLAN (Impact analysis for PLANning, developed by MIG, Inc.) model.[17] IMPLAN is commonly used by state and federal agencies for policy planning and evaluation purposes. The model draws upon data from several federal and state agencies, including the Bureau of Economic Analysis and the Bureau of Labor Statistics. IMPLAN utilizes the U.S. Office of Management and Budget's North American Industry Classification System (NAICS) to define and characterize activity in different sectors of the economy. The model translates initial expenditures into changes in demand for inputs from affected industries. These effects can be described as direct, indirect, or induced, depending on the nature of the change.

- Direct effects are changes in the economic activity of a particular industry as a result of a change in demand for the goods or services that industry provides. In the context of this analysis, for example, a change in spending by boaters on groceries would have a direct effect on output and employment in NAICS 445 – Food and Beverage Retail.
- Indirect effects are changes in the output of industries that supply goods and services to those that are directly affected by the initial change in expenditures. Following the example provided above, a change in spending by boaters on groceries might have an indirect effect on output and employment in NAICS 311, Food Manufacturing.
- Induced effects reflect changes in household consumption arising from changes in employment and associated income that are the result of direct and indirect effects. For example, an increase in employment in NAICS 445 – Food and Beverage Retail would lead to additional spending on a variety of goods and services by the industry's new employees.

Direct, indirect, and induced effects are calculated for all industries and are aggregated to determine the overall impact of boater expenditures on the regional economy.

17 The IMPLAN model is owned and maintained by the Minnesota IMPLAN Group, Inc. (MIG). Information in this section is compiled in part from: IMPLAN Professional, User Guide, Analysis Guide, Data Guide, and Impact Analysis Software, Minnesota IMPLAN Group, Inc., 1,999-2,004.

Analysis of the impact of boating expenditures on the economy of the six-state region entails three steps:

Step 1: Estimate boater expenditures by expenditure type

As noted above, the analysis provides detailed estimates of annual boater expenditures by type (e.g., expenditures on boat fuel/oil, restaurant meals and drinks, groceries). For purposes of the regional economic impact analysis, we sum these values by state to estimate total annual expenditures in three categories: trip, visit, and yearly expenditures.

Step 2: Assign expenditures to IMPLAN industry sectors

We assign expenditures reported in survey responses to IMPLAN industry sectors using schemes recommended by the developers of IMPLAN and precedents established in similar studies.[18] IMPLAN groups industries into 440 sectors, which is many fewer than are defined in industry NAICS codes. As a result, IMPLAN sectors are generally not as precise as NAICS codes.

In some cases, the IMPLAN sector to which particular expenditures should be assigned is readily apparent. For example, survey expenditures reported for restaurant meals and drinks are assigned to IMPLAN industry 413, Food Services and Drinking Places. In other cases, the IMPLAN industry to which expenditures should be allocated is not as transparent, and requires careful consideration of the NAICS codes included in a particular IMPLAN sector. For example, the NAICS code for the marina industry, 713,930, is included in a broader sector within IMPLAN that includes boating, sailing, and yacht clubs, but also amusement parks, arcades, casinos, and other facilities associated with the gambling industry. The bridge from reported expenditure category to NAICS and IMPLAN industry code are presented in Tables 11 and 12, and corresponding Survey Questions can be found in Appendix A.

Note that spending reported in the End of Season Survey on taxes (1.6 percent of yearly expenditures) and state registration fees (1.8 percent of yearly expenditures) was not included as an input to the modeling effort. This information was excluded because the IMPLAN model independently generates estimates of the impact of changes in other expenditures on payments to government; thus, including data from the survey on taxes and registration fees would lead to double-counting.

18 See Hellin et al., "2010 Massachusetts Recreational Boater Survey," Submitted to the Massachusetts Ocean Partnership, June 2011; Donahue Institute, "An Assessment of the Coastal and Marine Economies of Massachusetts," Massachusetts Office of Coastal Zone Management, 2,006; and Connelly, N.A., T.L. Brown, and D.L. Kay, "Recreational Boating Expenditures in 2,003 in New York State and Their Economic Impacts," Prepared for New York Sea Grant, a joint program of the State University of New York and Cornell University, 2,004.

Table 11: Assigning Expenditures to NAICS and IMPLAN Industry Codes: Trip and Visit Expenditures.

Survey Question		Expenditure Type	NAICS	IMPLAN INDUSTRY	IMPLAN Description
Trips	Visits				
15a	22a	Boat fuel/oil	447	326	Retail services: gas stations
15b	22b	Transient/guest dockage (marina fee)	713	409	Amusement parks, arcades, and gambling industries (includes marinas)
15c	n/a	Launch fees	713	409	Amusement parks, arcades, and gambling industries (includes marinas)
15d	22c	Pumpout fees	713	409	Amusement parks, arcades, and gambling industries (includes marinas)
15e	22d	Restaurant meals & drinks	722	413	Food services and drinking places
15f	22e	Groceries	445	324	Retail: food and beverage
15g	22f	Auto gas and oil	447	326	Retail services: gas stations
15h	22g	Shopping and souvenirs	452	329	Retail store: general merchandise
15i	22h	Recreation and entertainment	713	410	Other amusement and recreation industries
15j	22i	Lodging (hotel/motel)	721110	411	Hotels and motels, including casino hotels
15k	22j	Lodging (camping/B&B)	721,214/ 721211	412	Other accommodations
15l	22k	Fishing gear, bait, etc.	451	328	Retail stores: sporting goods, hobby, book, and music
15m	22l	Equipment, maintenance, repairs, and upkeep	811490	418	Personal and household goods repair and maintenance
15n	22m	Other	Misc.	418	Personal and household goods repair and maintenance

Table 12: Assigning Expenditures to NAICS and IMPLAN Industry Codes: Yearly Expenditures.

Survey Question	Type	NAICS	IMPLAN INDUSTRY	IMPLAN Description
1a	Routine vessel maintenance	811490	418	Personal and household goods repair and maintenance
1b	Repairs to existing vessel	811490	418	Personal and household goods repair and maintenance
1c	Purchase of new trailer	441222	320	Retail stores: motor vehicles and parts
1d	Safety-related equipment (PFDs, inflatable flotation devices, flares, first aid kits, fire extinguishers, vapor detectors)	441222	320	Retail stores: motor vehicles and parts
1e	Purchase of new equipment or vessel upgrades	441222	320	Retail stores: Motor vehicles and parts
2a	Boat loan payments	5223/ 5222	354	Monetary authorities and depository credit intermediation
2b	Boat insurance	5241	357	Insurance carriers
2c	State registration	n/a	n/a	n/a
2d	Taxes	n/a	n/a	n/a
2e	Fishing-related expenses	4510000	328	Retail stores: sporting goods, hobby, book, and music
2f	Dockage, mooring, storage	713	409	Amusement parks, arcades, and gambling industries
3b	Other: Value of 3a	Misc.	418	Personal and household goods repair and maintenance

Step 3: Utilize Multi-region Input-Output (MRIO) analysis to generate estimates of direct, indirect and induced impacts in each state and throughout the region

We developed six IMPLAN models, one for each state in the study region, to evaluate the economic impacts of marine recreational boating expenditures within each state. In addition, for each state, we created a complementary five-state regional model, which includes all states in the six-state region other than the primary state of interest; these complementary models are designed to capture the economic impact of spending within a state on the other five states in the study area. We then used multi-regional input-output modeling to calculate the direct, indirect, and induced impacts of the boating expenditures made within each state. Impacts both in-state and out-of-state were modeled by expenditure category (i.e., for trip, visit, and yearly expenditures).[19] The analysis estimates the impact of boating expenditures on four measures of regional economic activity: employment demand; labor income; value added; and output. These measures are defined as follows:

- **Employment Demand** reflects the impact of an expenditure on labor requirements within a region, and is measured in "year-round jobs" (full-time-equivalent (FTE) employees per year). Thus, the impact of marine recreational boating expenditures on employment demand can be thought of as the number of workers (on an FTE basis) required to meet the demand for goods and services such expenditures create.
- **Labor Income** includes wages, worker benefits, and proprietor income. The impact of marine recreational boating expenditures on this measure is a general indication of the effect of such expenditures on payments to the operators and employees of affected businesses.
- **Value Added** is defined as the difference between an industry's or establishment's total output and the costs of its intermediate inputs. This measure is analogous in many ways to the measurement of gross domestic product (GDP). Thus, the impact of marine recreational boating expenditures on this measure indicates the overall impact of such expenditures on GDP at the state or regional level.
- **Output** represents the value of industry production. For manufacturers, output is defined as sales plus or minus the change in manufacturing inventory. In the retail and wholesale sectors, output is defined simply as the gross margin on sales. Thus, the impact of marine recreational boating expenditures on output can be interpreted as the effect of such expenditures on overall economic activity at the state and regional level.

Limitations to IMPLAN: There are two important caveats relevant to the interpretation of IMPLAN model estimates, both generally and within the context of this analysis.

1. The model is static in nature and measures only those effects resulting from a specific expenditure change at one point in time. Thus, IMPLAN does not account for subsequent adjustments that may occur, such as the re-employment of workers employed or displaced by the original change in expenditures.
2. The IMPLAN analysis relies upon input/output relationships derived from 2011 data, the most recent data available at the time of this analysis. The results do not reflect changes in the regional economy that may have occurred since 2011. The magnitude or nature of any such changes is unknown.

19 It is not possible to assign out-of-state impacts to a particular state within the study region; instead, they are simply reported as "other inter-state impacts." These impacts account for less than five percent of the total impact of recreational boating expenditures on the region.

Chapter 4: Results

The following subsections under Chapter 4 contain the survey results, which we categorized into response rates; participants' boat characteristics; owner characteristics; spatial data (maps and analysis), economic impact estimates and year-round jobs; and boaters' feedback on boating-related topics (e.g., boating safety, use compatibility, and survey feedback).

Refer to Chapter 5 "Discussion" for discussion of the survey results and highlighted key findings.

4.1 Response Rates

As noted earlier, the survey team asked boaters to respond to three types of surveys:

1. Recruitment Survey
2. Monthly Surveys
3. End of the Season Survey

The response rates to the Recruitment Survey, Monthly Surveys, and End of Season Survey can be found below.

4.1.1 Recruitment Survey

Boaters returned a total of 12,218 Recruitment Surveys as a result of the two recruitment mailings sent to 67,772 boat owners in the Northeast (Table 13). Of the 67,772 recruitment mailings, 1,579 mailings were returned with undeliverable addresses. Since this was the only contact information available for these boat owners, these were excluded from the survey. Of the remaining 66,193 recruitment mailings, boaters completed and returned a total of 12,218 Recruitment Surveys either through the mail or on the web, resulting in a return rate of 18.5%. Return rates varied from a low of 14.4% in New York to a high of 21.8% in both Maine and New Hampshire. Out of the 12,218 returned Recruitment Surveys, 7,800 boaters were eligible (Table 13) to participate in the 2012 NE Survey.

Table 13: Boaters' Response to Recruitment Mailing.

State	Total Sample Mailed	Un-deliverable Addresses	Returned Recruitment Surveys	Eligible Returned Surveys	Return Rate (%)[a]	Eligibility Rate (%)[b]
ME	14,782	590	3,092	1,844	21.8	59.6
NH	6,367	46	1,375	615	21.8	44.7
MA	13,865	569	2,353	1,668	17.7	70.9
RI	6,348	86	1,121	715	17.9	63.8
CT	9,958	54	1,940	1,192	19.6	61.4
NY	16,452	234	2,337	1,766	14.4	75.6
Total	**67,772**	**1,579**	**12,218**	**7,800**	**18.5**	**63.8**

[a] Return Rate calculated as (Returned Surveys)/(Total Sample mailed – Bad Addresses)
[b] Eligibility Rate calculated as (Eligible Returned Surveys)/(Returned Surveys)

The amount of time it took to begin receiving Recruitment Surveys was very similar for both the first and second mailing. Most boaters completed online surveys within 1-2 days after the recruitment mailing was sent, and then after about a week, the number of completed online registrations trailed off considerably. There was approximately a one week turn-around between the survey invitation mailing and the Recruitment Surveys arriving at University of New Hampshire (UNH) Survey Center, where the data were entered. Once the UNH Survey Center began receiving surveys, they received most within the first two days (~2,000), and then the number of returns trailed off considerably as time passed.

As displayed in Figure 21, approximately 79.1% of boaters returned Recruitment Surveys through the mail, and 21.6% filled out the survey online.

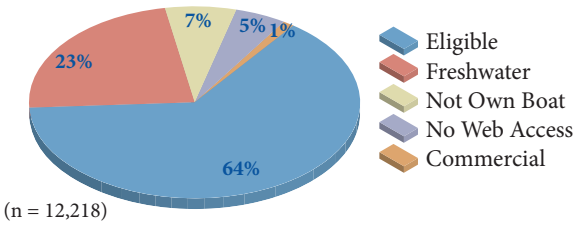


Figure 21: Eligible and Ineligible Responses to Recruitment Survey

The overall eligibility rate for the returned Recruitment Surveys was 63.8%, ranging from a low of 44.7% for boat owners in New Hampshire and a high of about 75.6% in New York. Figure 22 shows the reason for ineligibility in the entire Northeast, and Table 14 show the reasons for ineligibility in each of the six states.

By far, the most common reason for ineligibility was that the boat was only used in freshwater (22.9% of all returns). After that, 7.2% of returns were ineligible because the person no longer owned the boat, and 4.5% had no web access or no email address.

4.1.2 Monthly and End of Season Surveys

Table 15 contains information on the total number of Monthly Surveys completed by boaters per state for the entire surveying period.

According to Table 15, 42,355 individual email notifications with a link to that month's online survey were sent to participating boaters. From these notifications, boaters completed 13, 566 Monthly Surveys for an overall 33.1% response rate. About 66.4% of the surveys reported on an on-water boating trip, which resulted in 7,564 surveys with a completed mapping section of

Table 14: Eligible and Ineligible Responses to Recruitment Survey by State.

State	Total Returned	Eligible	Ineligible				
			Freshwater	Not Own Boat	No Web Access	Commercial	Missing Information*
ME	3,092	1,844	851	181	163	43	10
NH	1,375	615	620	93	26	19	2
MA	2,353	1,668	410	121	113	33	8
RI	1,211	715	206	113	55	25	7
CT	1,940	1,192	522	122	87	14	3
NY	2,337	1,766	191	247	108	15	10
Total	12,218	7,800	2,800	877	552	149	40
		63.8%	22.9%	7.2%	4.5%	1.2%	0.4%

[a]Missing information: Boaters did not answer all the questions needed to determine eligibility (e.g., boater did not answer whether they only use boat in freshwater).

Table 15: Number of Surveys Completed Throughout Surveying Period

Activity	ME	NH	MA	RI	CT	NY	Total
Surveys Sent	9,982	3,337	9,056	3,906	6,478	9,596	42,355
Surveys Bounced Back	343	131	301	109	193	320	1,397
Surveys Delivered	9,639	3,206	8,755	3,797	6,285	9,276	40,958
Survey Completed	3,583	1,111	3,071	1,393	2,091	2,317	13,566
Percent Completed	37.2	34.7	35.1	36.7	33.3	25	33.1
Took Trip on Water	2,209	678	2,035	935	1,447	1,704	9,008
Percent Took Trip on Water	61.7	61	66.3	67.1	69.2	73.5	66.4
Completed Map	1,844	555	1,708	794	1,243	1,420	7,564
Percent Completed Map	83.5	81.9	83.9	84.9	85.9	83.3	84.0

Surveys Sent: Number of surveys sent by email during the surveying period (not including reminder emails)
Surveys Bounced Back: Number of surveys sent by email that bounced back (e.g., possibly wrong email address)
Surveys Delivered: Surveys send – surveys bounced back
Surveys Completed: Number of surveys completed by boaters
Percent Completed: Percentage of surveys completed by participating boaters (survey completed/survey sent – surveys bounced back) *100
Took Trip on Water: Number of boaters that indicated in their Monthly Survey that they took a boating trip on the water
Percent Took Trip on Water: (Took Trip on Water/Survey Completed) *100
Completed Map: Number of boaters that completed the mapping segment of the survey
Percent Completed Map: (Completed Map/Took Trip on Water)*100

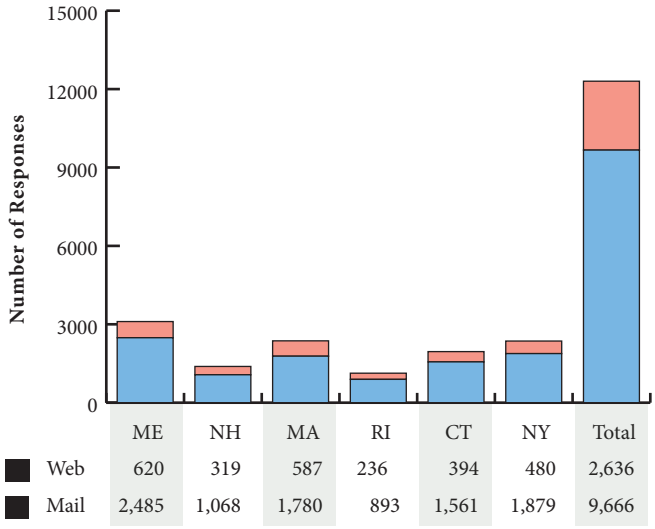
the survey.[20] Approximately 84% of all boaters that were directed to the mapping application successfully completed that portion.

Regarding the sample size for each Monthly Survey, the sample size increased for the first few months until August. Between September and October, the sample size slightly decreased, and the sample size for the October and End of Season Surveys remained the same since the surveys were administered together (Figure 23).

As shown by Figure 24, the rate at which boaters completed surveys was highest in May at 47.8% and lowest in October at 27.6%.

As can be seen in Figure 25, the most surveys completed by boaters was during the month of July (2,613 surveys). The rate

20 While 7,564 surveys had a completed mapping section of the survey, boaters actually plotted 5,114 boating routes. This inconsistency is because boaters had the option of "skipping" the mapping application segment of the survey. If boaters decided to "skip" the mapping application, it would still count as a "completed map", hence the difference in number of surveys with completed mapping section and number of boating routes.



	ME	NH	MA	RI	CT	NY	Total
Web	620	319	587	236	394	480	2,636
Mail	2,485	1,068	1,780	893	1,561	1,879	9,666

Note: Numbers in this figure are not additive as 84 people responded by both mail and web.

Figure 22: Number of Participants that Completed Recruitment Surveys by Mail vs. Online

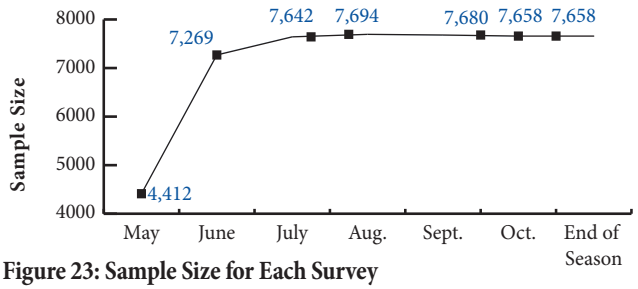


Figure 23: Sample Size for Each Survey

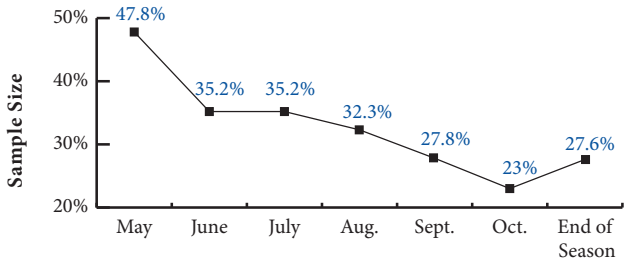
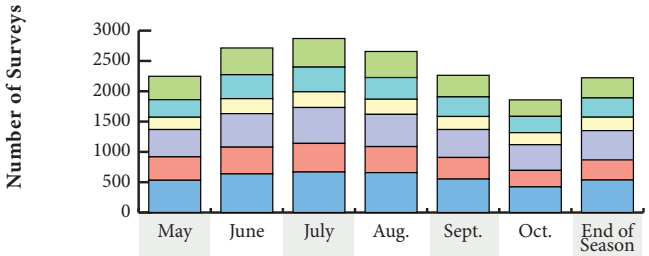


Figure 24: Percent of Registered Survey Participants who Completed Each Monthly Survey and the End of Season Survey



	May	June	July	Aug.	Sept.	Oct.	End of Season
ME	532	637	668	658	552	423	536
NH	386	441	472	430	356	272	332
MA	451	553	592	531	461	424	483
RI	202	247	259	249	215	198	221
CT	290	395	407	358	323	269	318
NY	386	441	472	430	356	272	332
TOTAL	2,247	2,714	2,745	2,860	2,263	1,858	2,222

Figure 25: Number of Surveys Completed Per Month by State

at which a boat owner took a boating trip in marine waters was highest in July at 79.5% and lowest in October at 39.8% (Figure 26).

Figure 27 shows the results of how many surveys were completed by individual boaters. This figure indicates that 4,297 individual boaters completed at least one Monthly Survey. 1,190 of those boaters completed only one survey while 699 completed all six surveys. Of the 7,800 eligible boaters in the sample, 3,503 boaters did not respond to any Monthly Surveys.

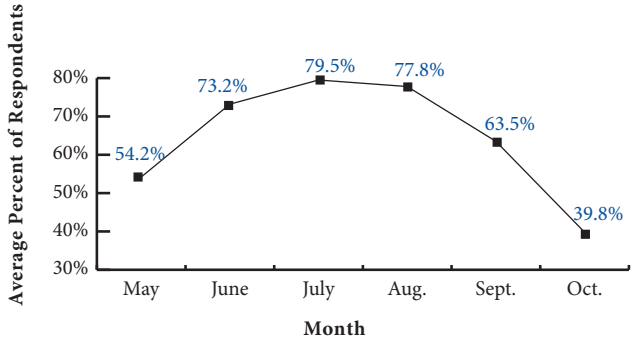


Figure 26: Average Percent of Survey Respondents that Took a Marine Boating Trip Each Month

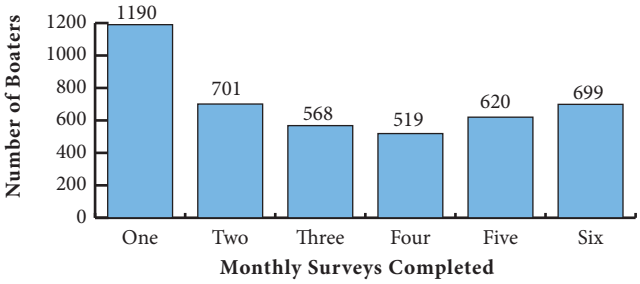


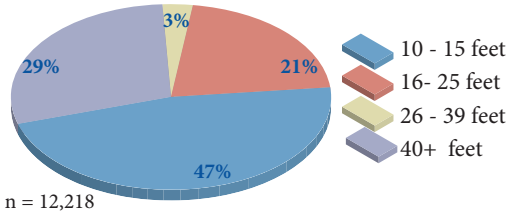
Figure 27: Number of Surveys Completed by Individual Boaters over the Surveying Period

4.2 Boat Characteristics

Nearly half of survey participants owned a boat between 16 - < 26 feet (46.9%); approximately 29.3% of survey participants owned a boat between 26 and < 40 feet; 20.5% owned a boat between 10 and < 16 feet, and 3.3% owned a boat over 40 feet (Figure 28). Also, most survey participants (46%) owned an open motorboat[21], 25% owned a cabin cruiser[22], and 18% owned a sailboat (Figure 29). Regarding income, most participants (55.7%) reported an income of $100,000 or greater, and 37.6% reported an income of less than $100,000.

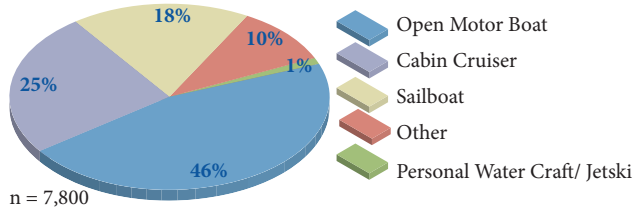
21 Motorboat with an open deck.

22 Motorboat that provides accommodations for its crew and passengers inside the structure of the craft.



*Note: These percentages were based on boaters who responded to the Recruitment Survey.

Figure 28: Length of Boat Owned by Survey Participants (percent of survey participants)



*Note: These percentages were based on boaters who responded to the Recruitment Survey.

Figure 29: Type of Boat Owned by Survey Participants

4.3 Owner Demographics

Survey participants reported on their age, gender, and income for 2011. Table 16 displays the average age and gender of survey participants. Regarding income, Figure 30 shows that most participants (55.7%) reported an income of $100,000 or greater, and 37.6% reported an income of less than $100,000.

4.4 Spatial Data

This section contains maps displaying the spatial data collected through the survey, and an analysis subsection which provides a written description of the spatial data.

Table 16: Average Age and Gender of Survey Respondents

Average Age	Gender
59.4 years older	90.2% male 9.4% female 0.4% no response

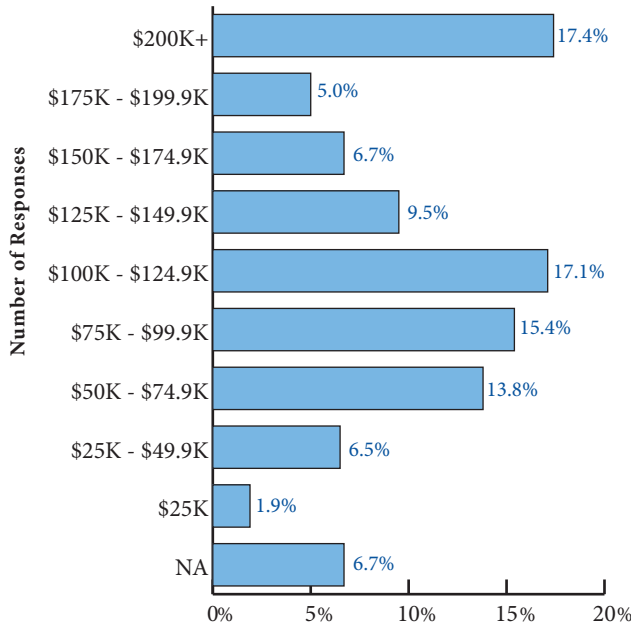


Figure 30: 2011 Income for Survey Participants

4.4.1. Maps

The maps display the spatial data collected through the survey, including 5,114 boating routes and 4,635 activity points (areas where boaters took part in activities such as fishing, wildlife viewing, SCUBA diving, swimming, and relaxing). The routes and activity points presented in the maps were provided directly from the boaters, although, as described in Chapter 3 "Methodology", we clipped the spatial data to remove activity points and portions of routes that crossed over land. Using geospatial analyses, we also developed density maps based on the boating routes that show the intensity of boating activity in the Northeast. The regional route maps and the density maps only contain routes from the regional random sample. The activity maps and the state specific route maps show data using the routes from the regional random sample and the supplementary sample.

The maps of boating activity are organized geographically, including both the maps of the Northeast, as well as zoomed-in maps for each state. More specifically, the order of the maps is as follows:

1. Northeast Region Maps
2. State Specific Maps
   - Maine Maps
   - New Hampshire Maps
   - Massachusetts Maps
   - Rhode Island Maps
   - Connecticut and Long Island Maps
   - New York Maps

The Northeast Maps include maps of boating routes, boating density, and activity points in the Northeast. Maps for each individual state include boating routes, boating density, activity points, species of fish targeted when fishing, and type of species viewed when wildlife viewing.

An analysis of the spatial data displayed in the maps can be found in the succeeding Section 4.4.2 "Analysis", and an interpretation of the spatial data can be found in Chapter 5 "Discussion".

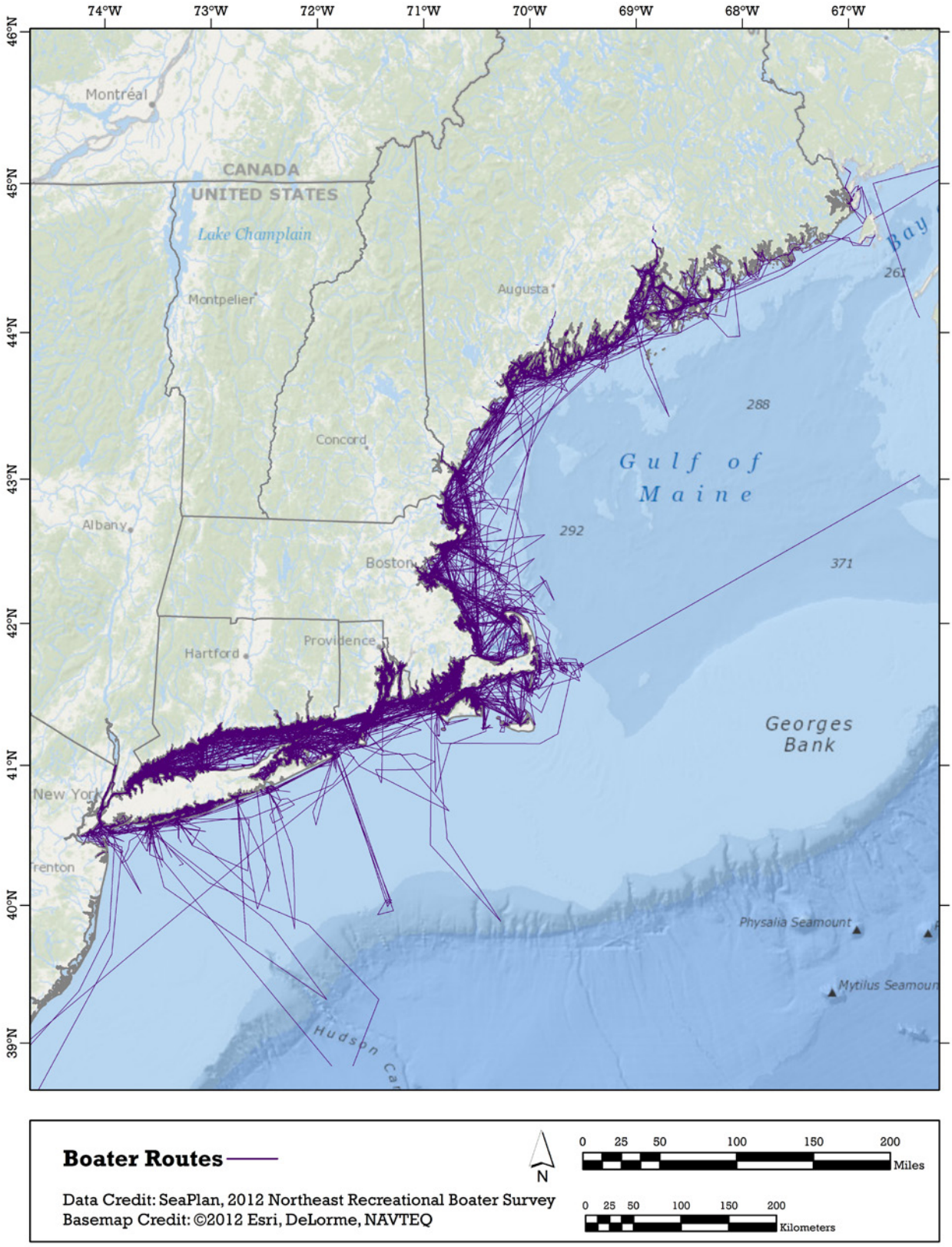


Figure 31: Northeast Map - Boating Routes

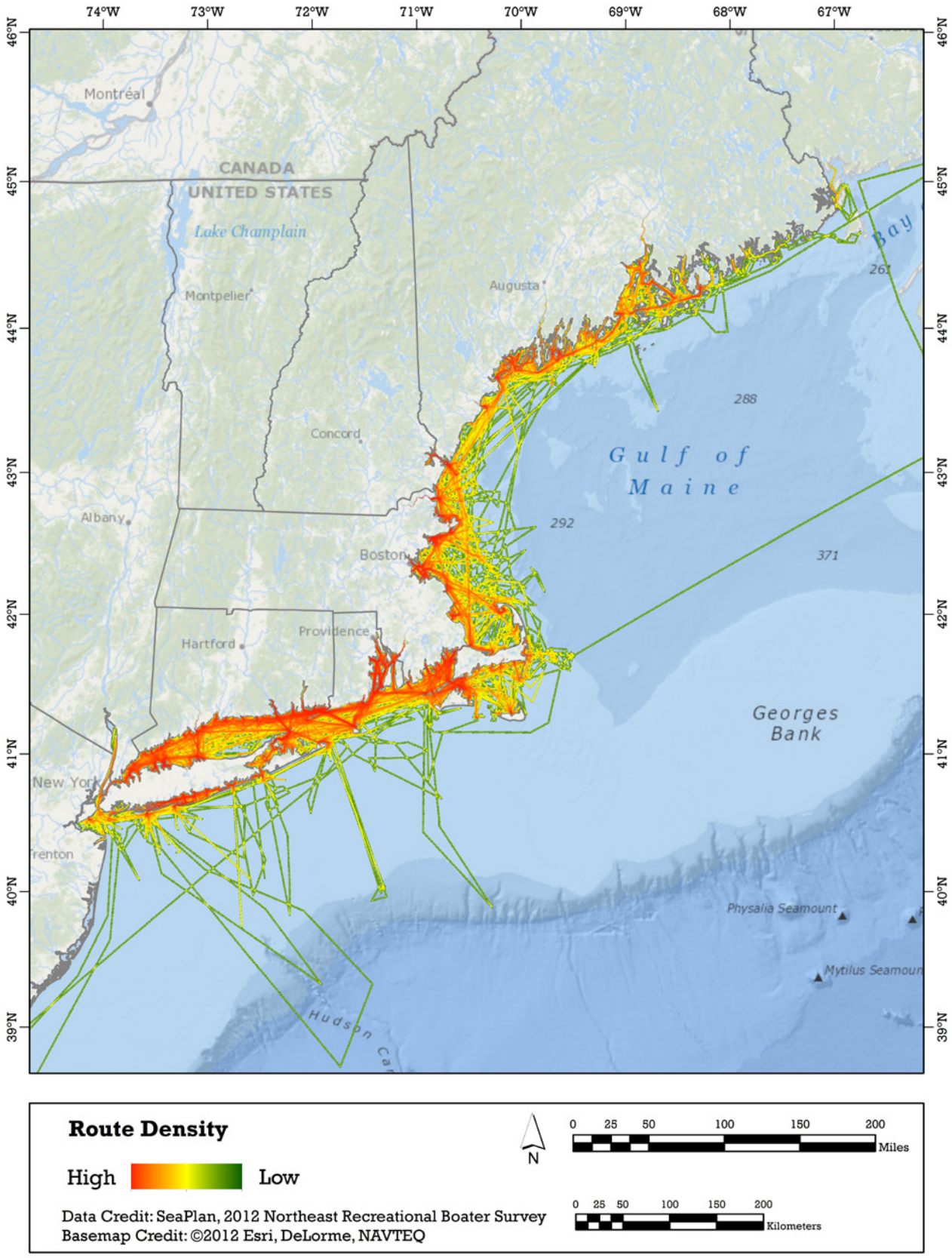


Figure 32: Northeast Map - Boating Density

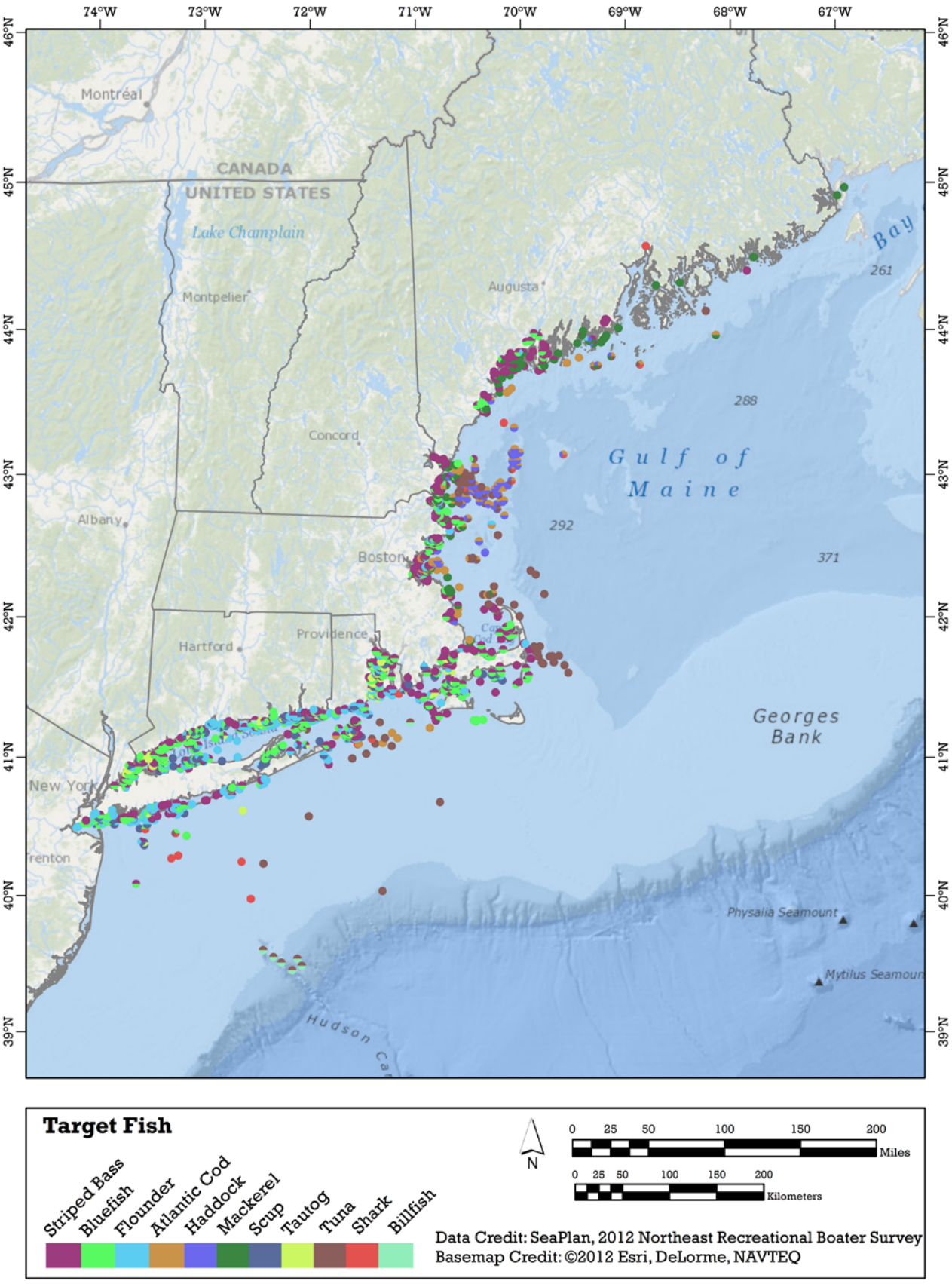


Figure 33: Northeast Map - Target Fish

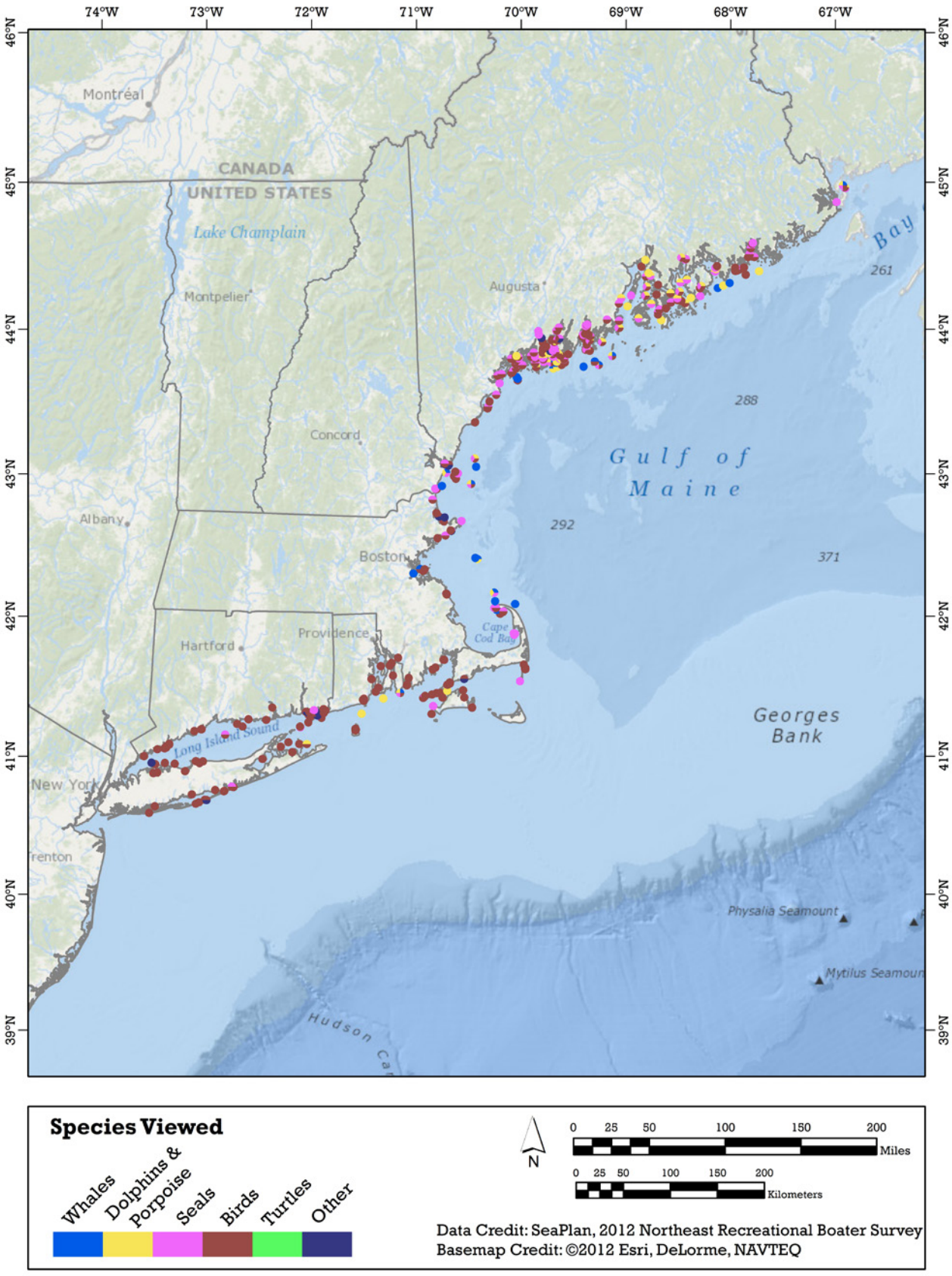


Figure 34: Northeast Map - Wildlife Viewing Activity Points

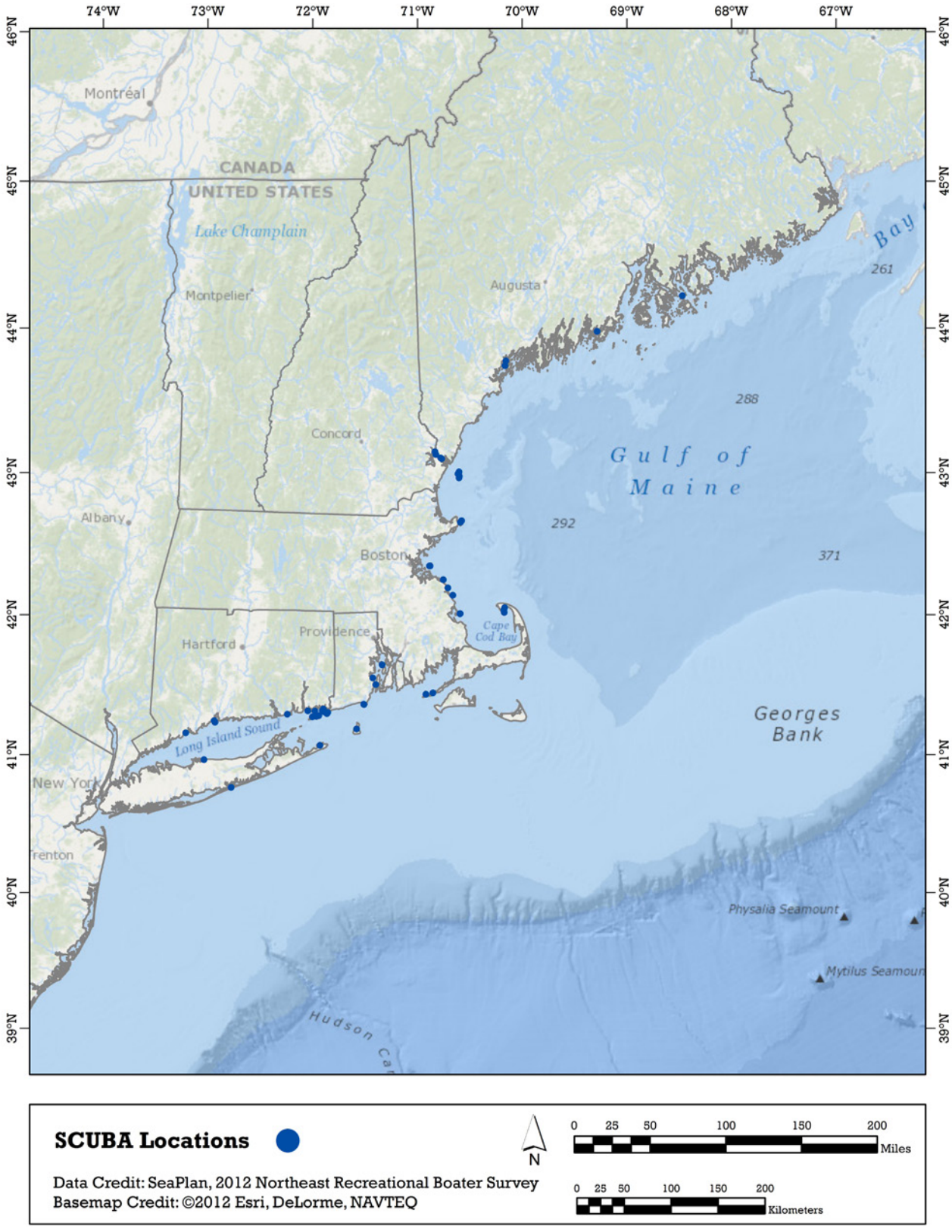


Figure 35: Northeast Map - SCUBA Diving Activity Points

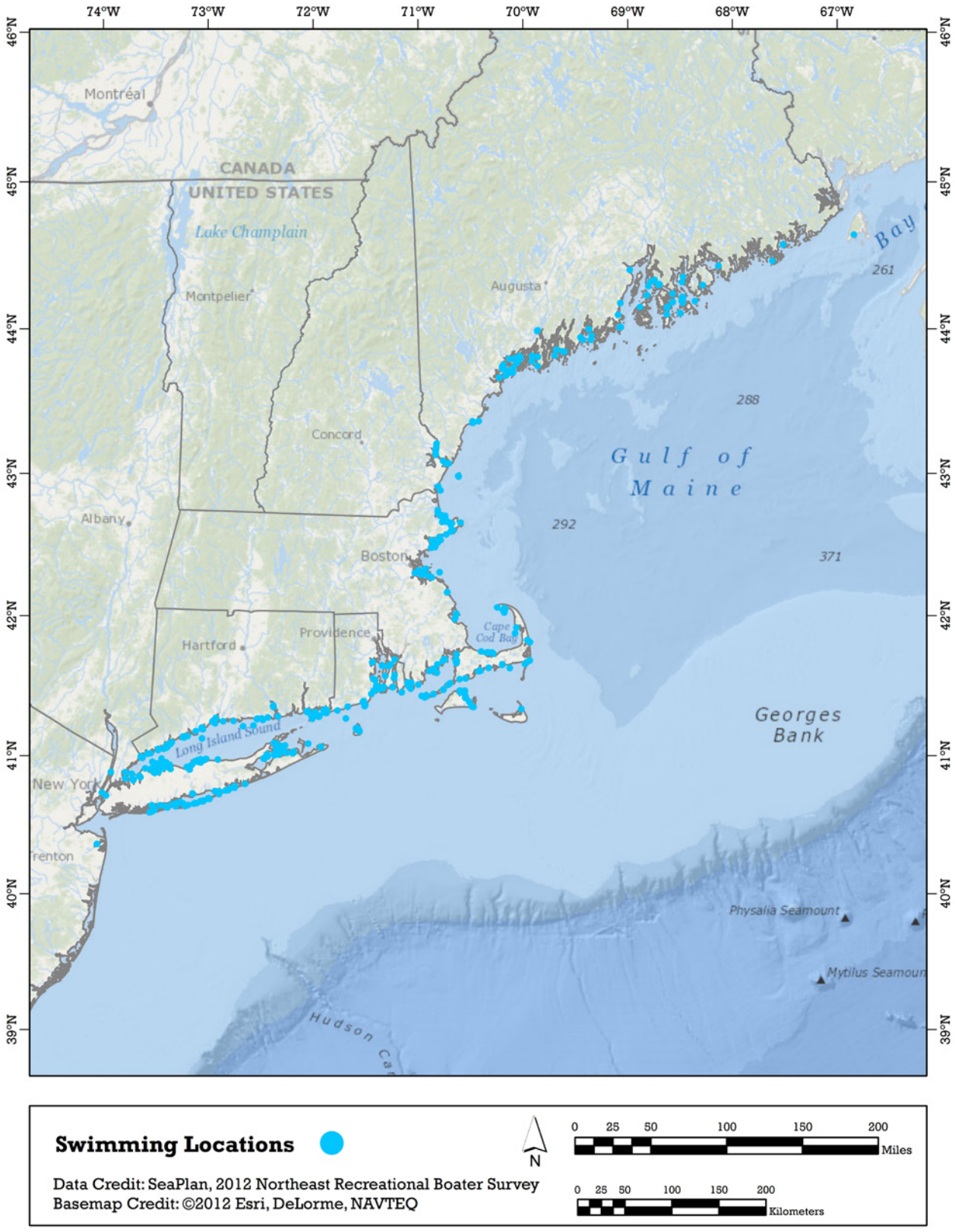


Figure 36: Northeast Map - Swimming Activity Points

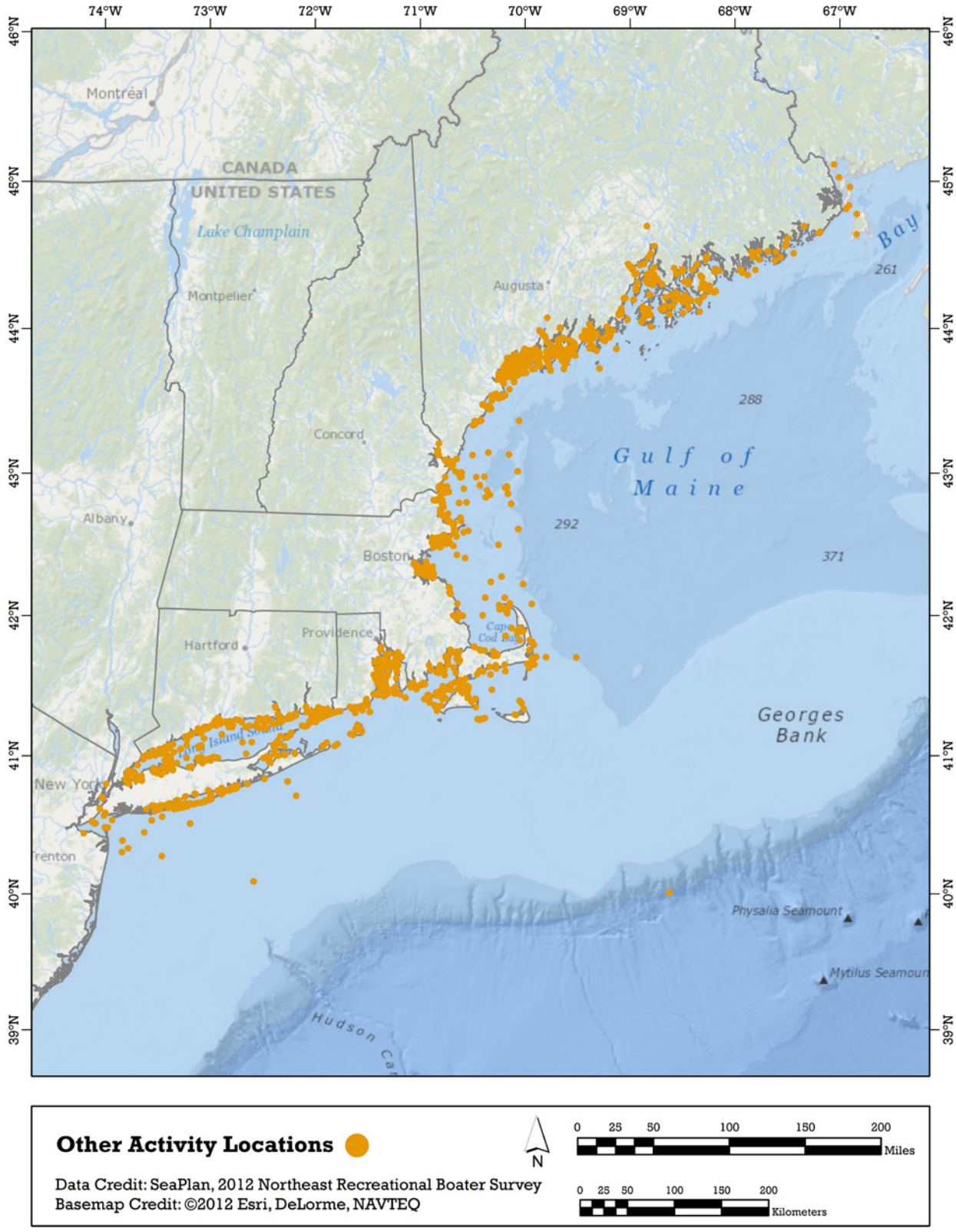


Figure 37: Northeast Map - Other Activity Points

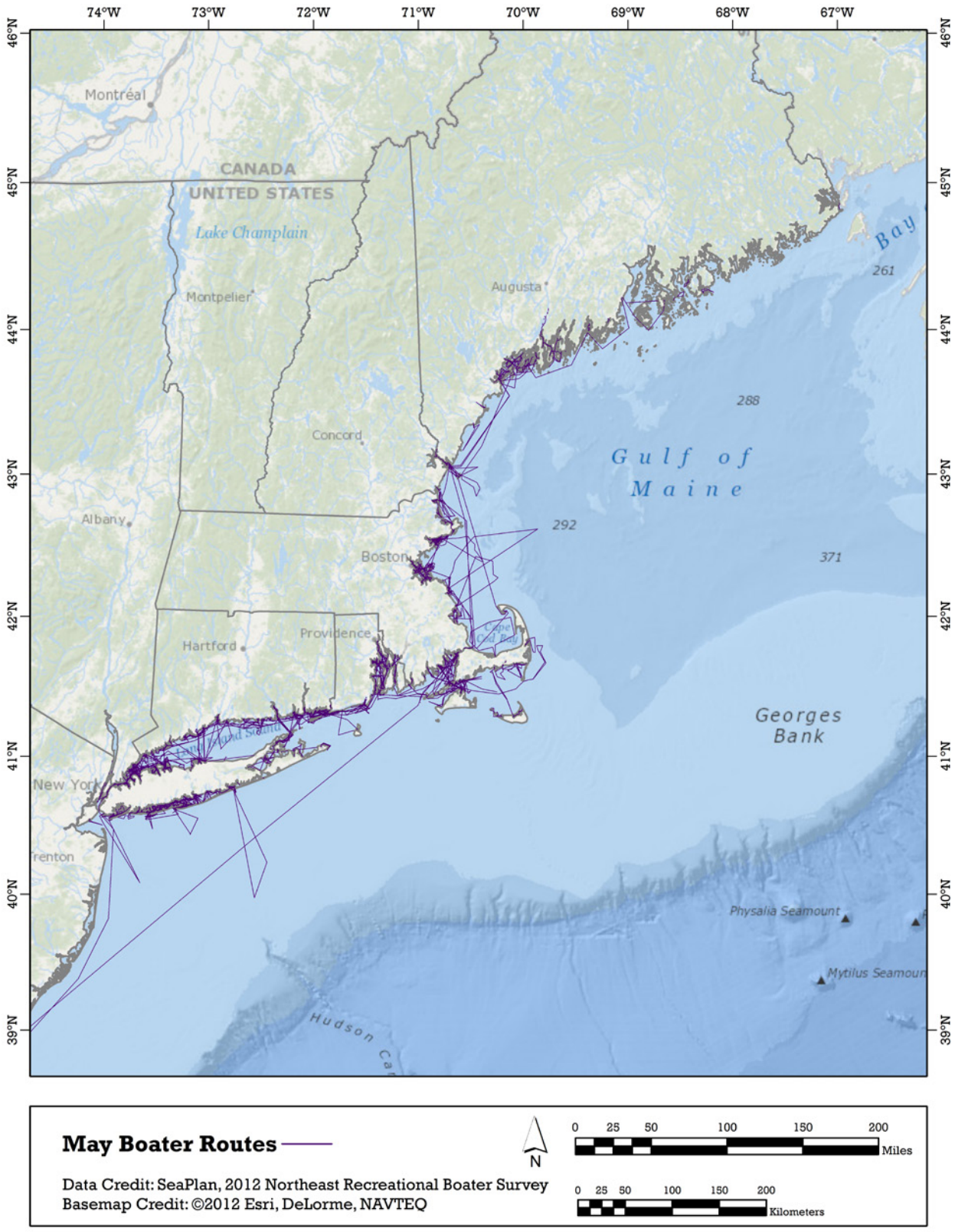


Figure 38: Northeast Map - Boating Routes Plotted for May

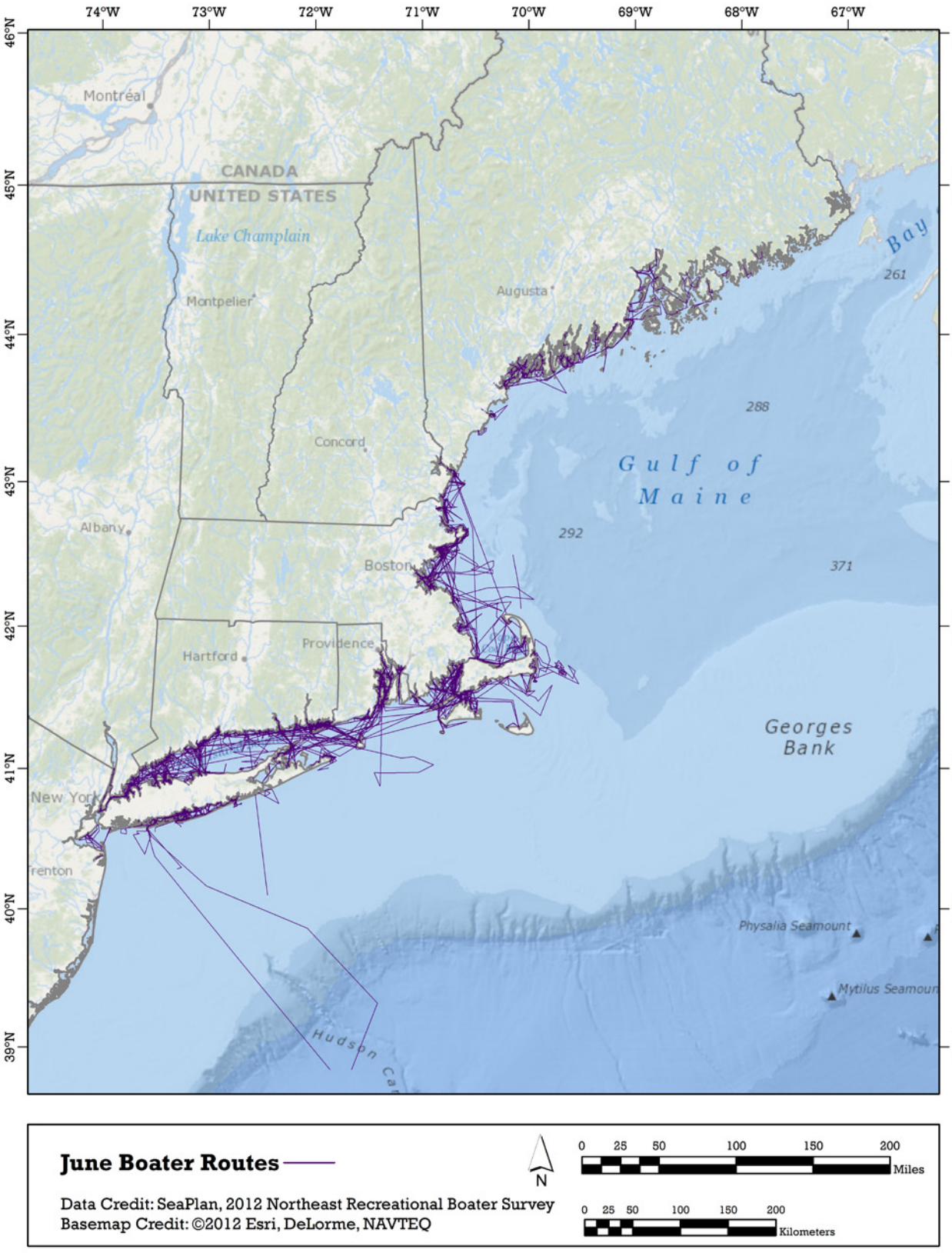


Figure 39: Northeast Map - Boating Routes Plotted for June

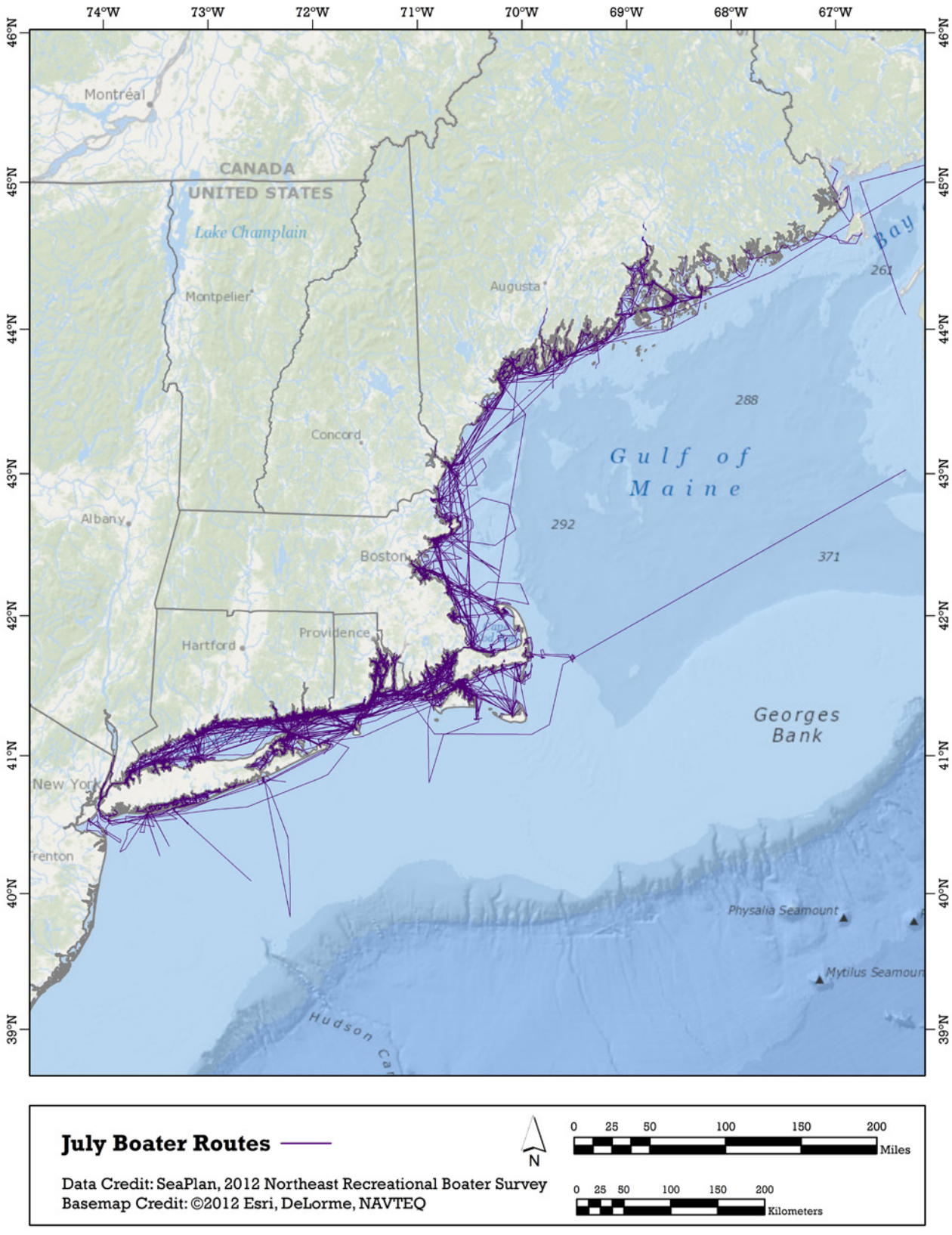


Figure 40: Northeast Map - Boating Routes Plotted for July

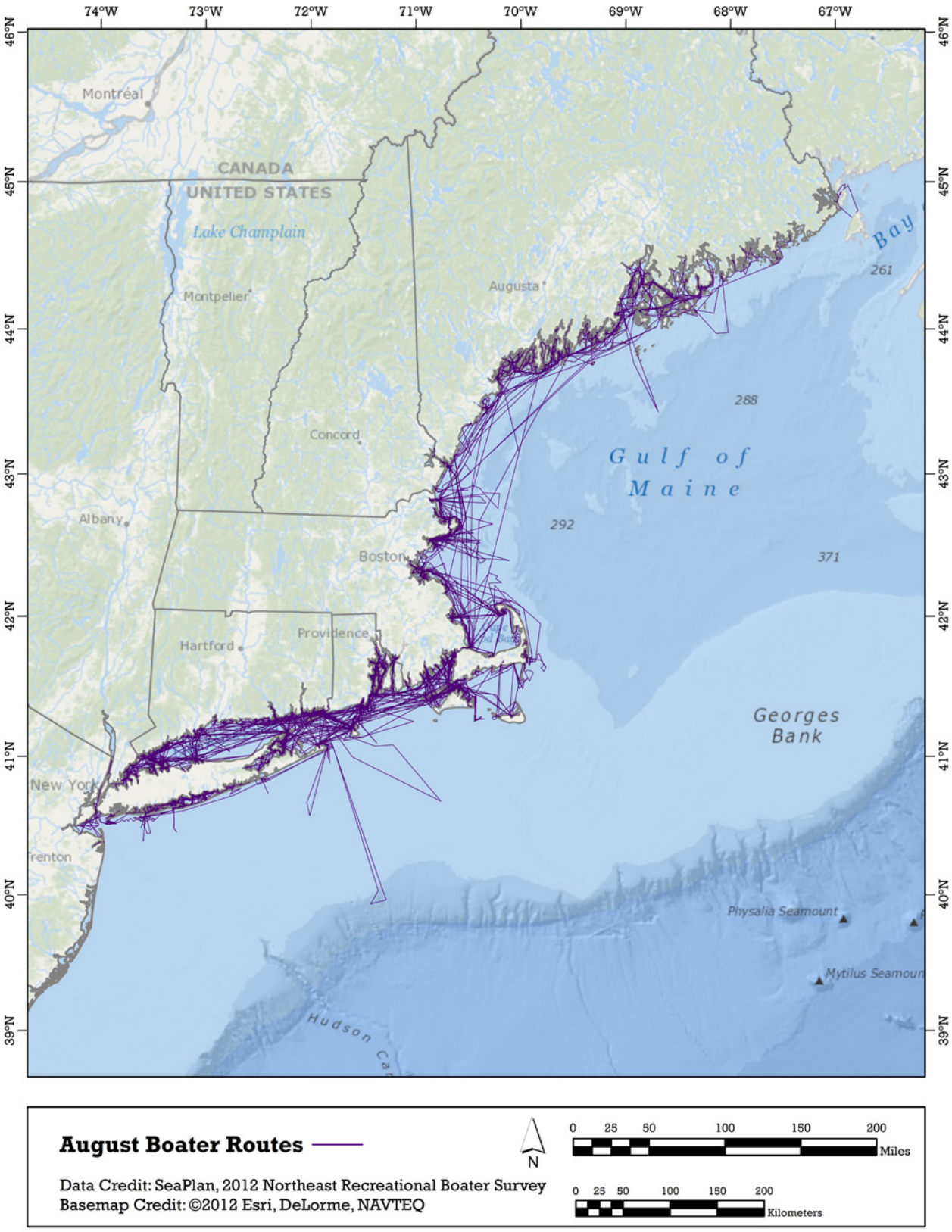


Figure 41: Northeast Map - Boating Routes Plotted for August

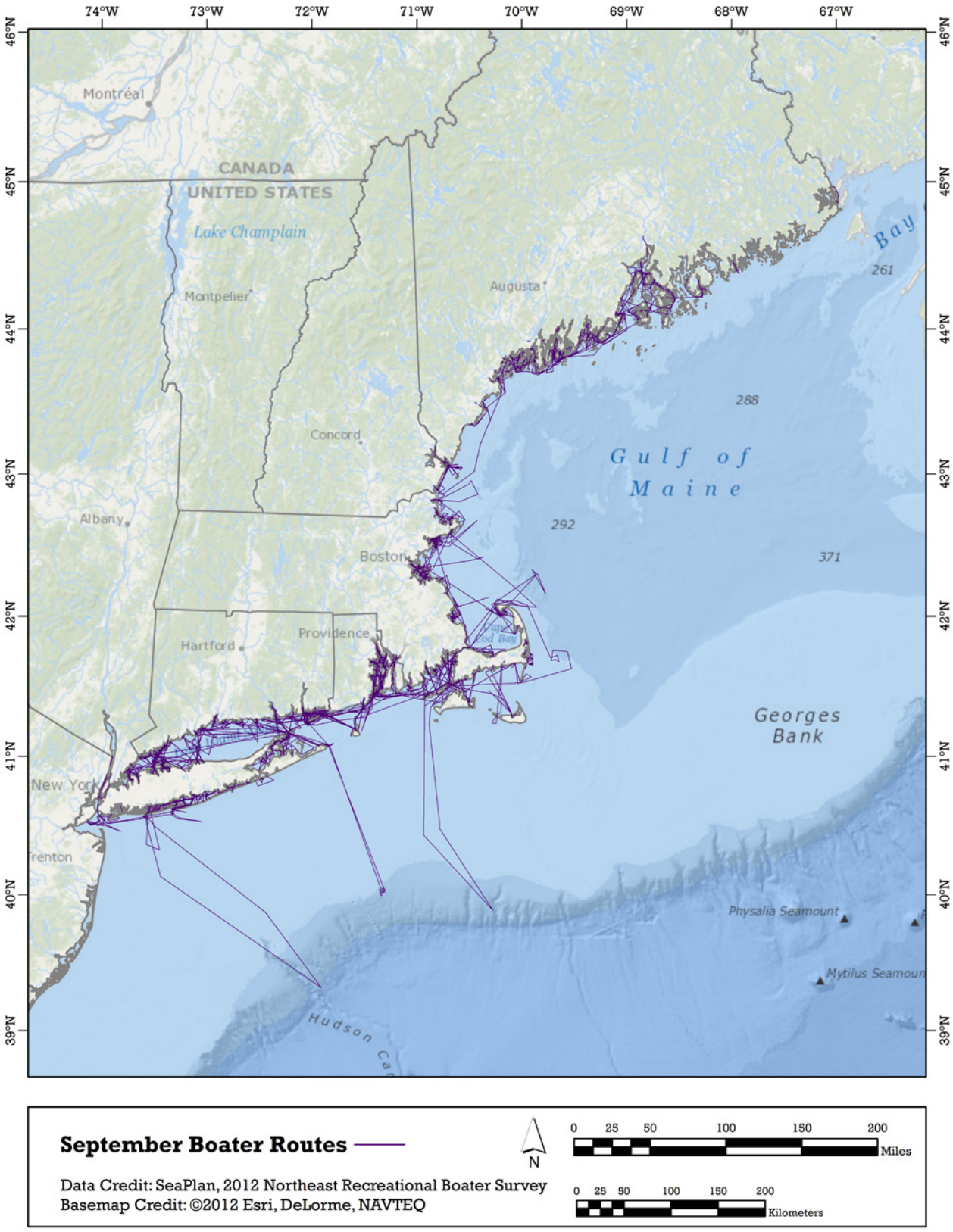


Figure 42: Northeast Map - Boating Routes Plotted for September

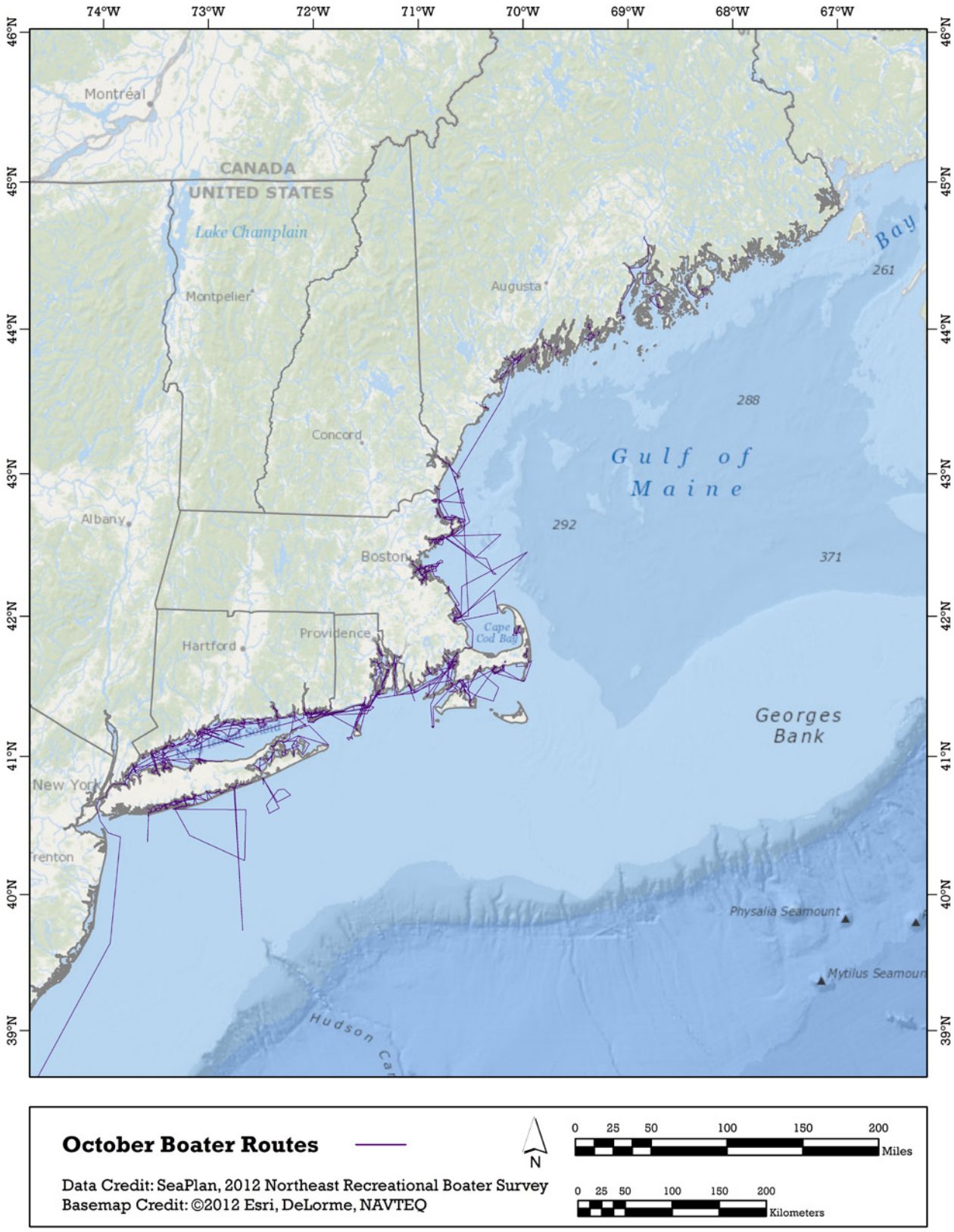


Figure 43: Northeast Map - Boating Routes Plotted for October

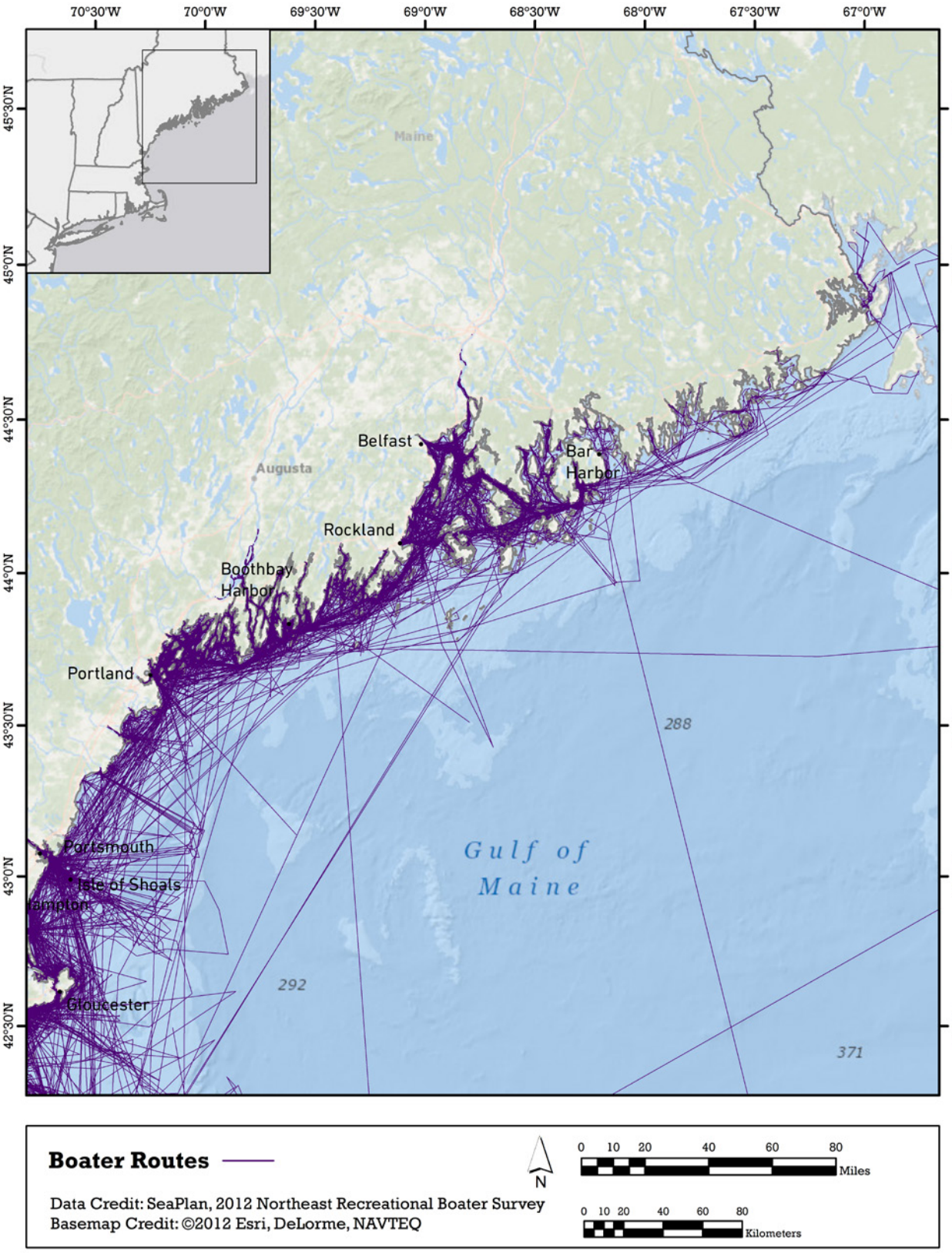


Figure 44: Maine Map - Boating Routes

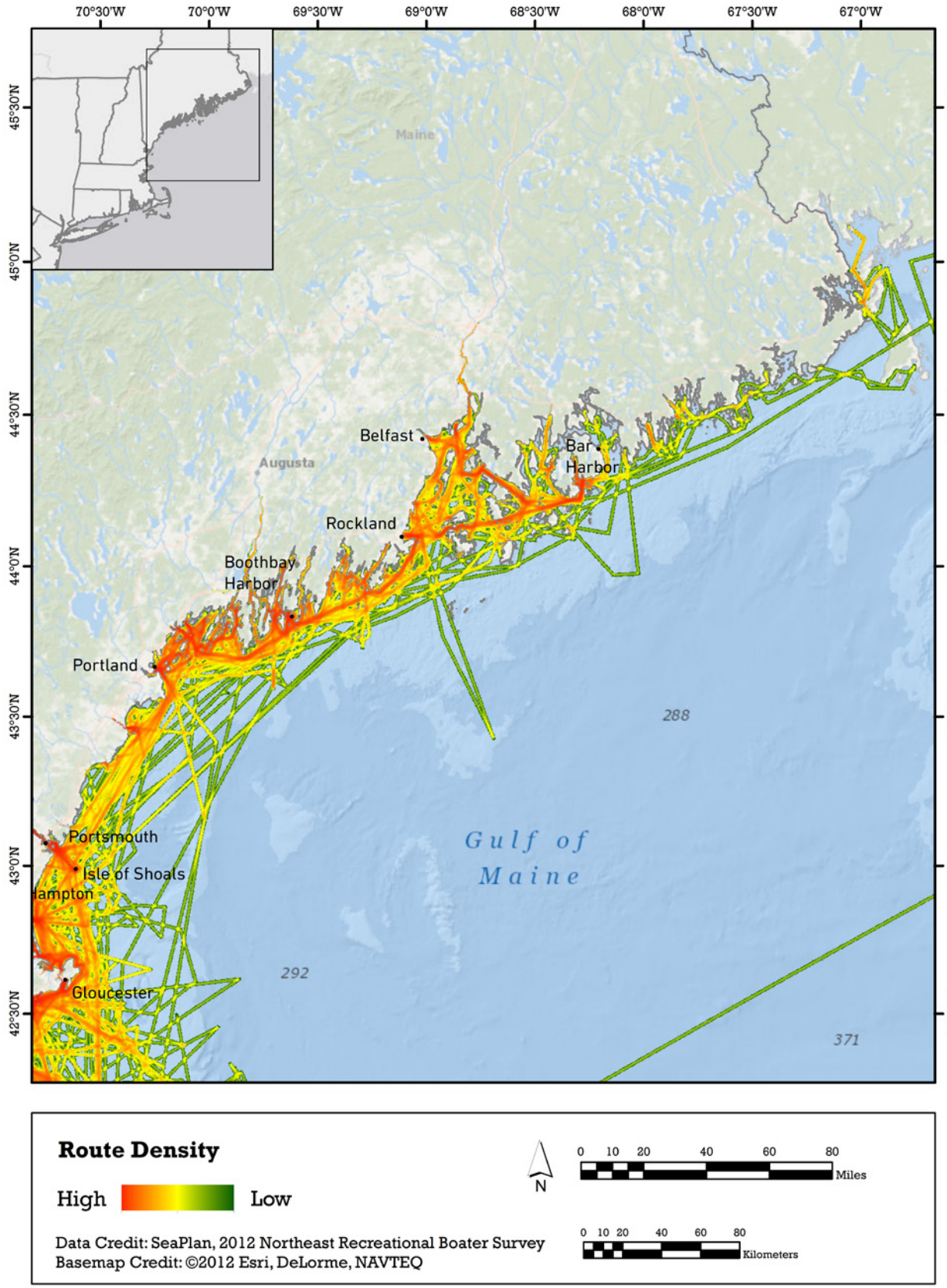


Figure 45: Maine Map - Boating Density

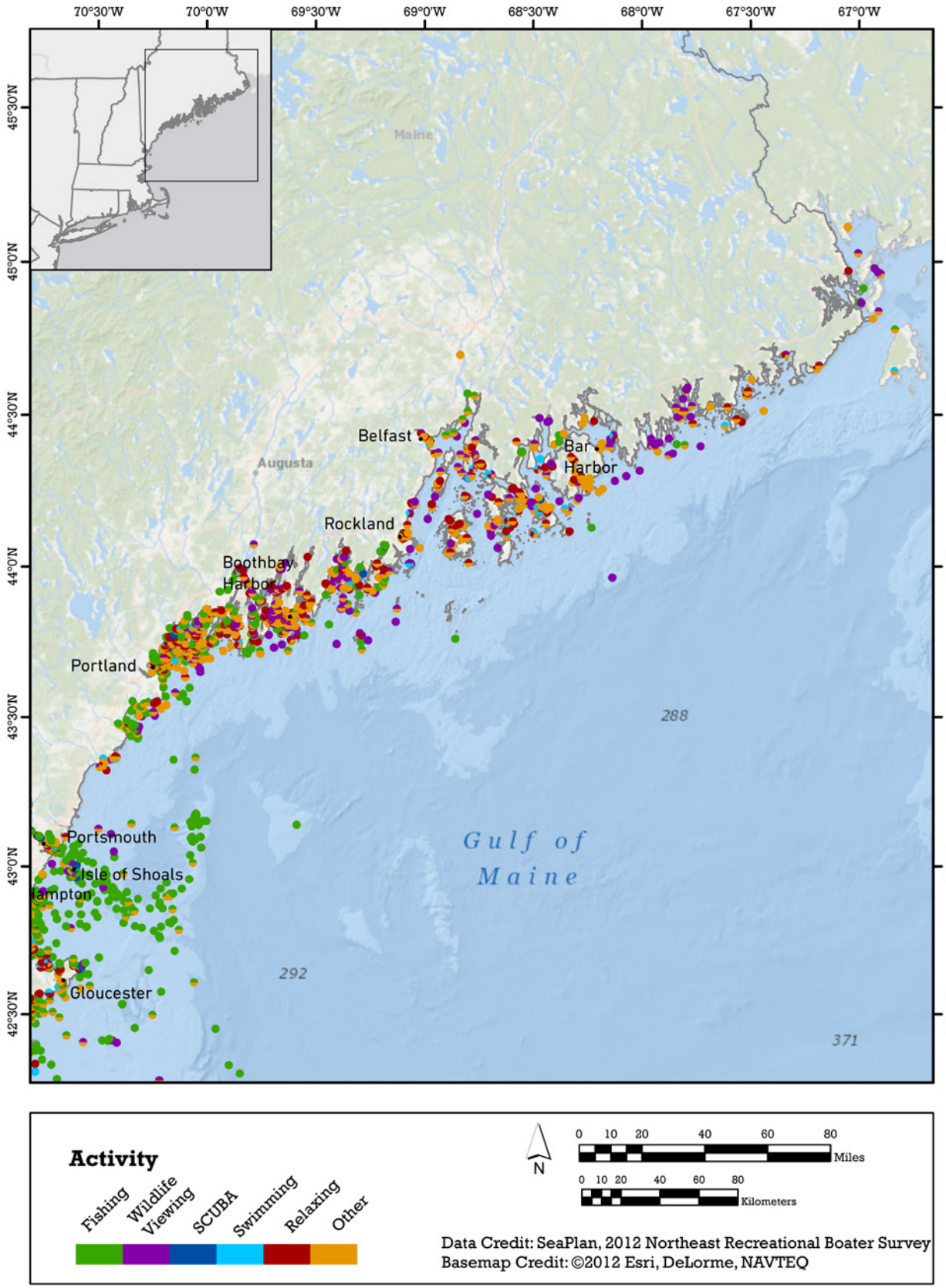


Figure 46: Maine Map - Activity Points

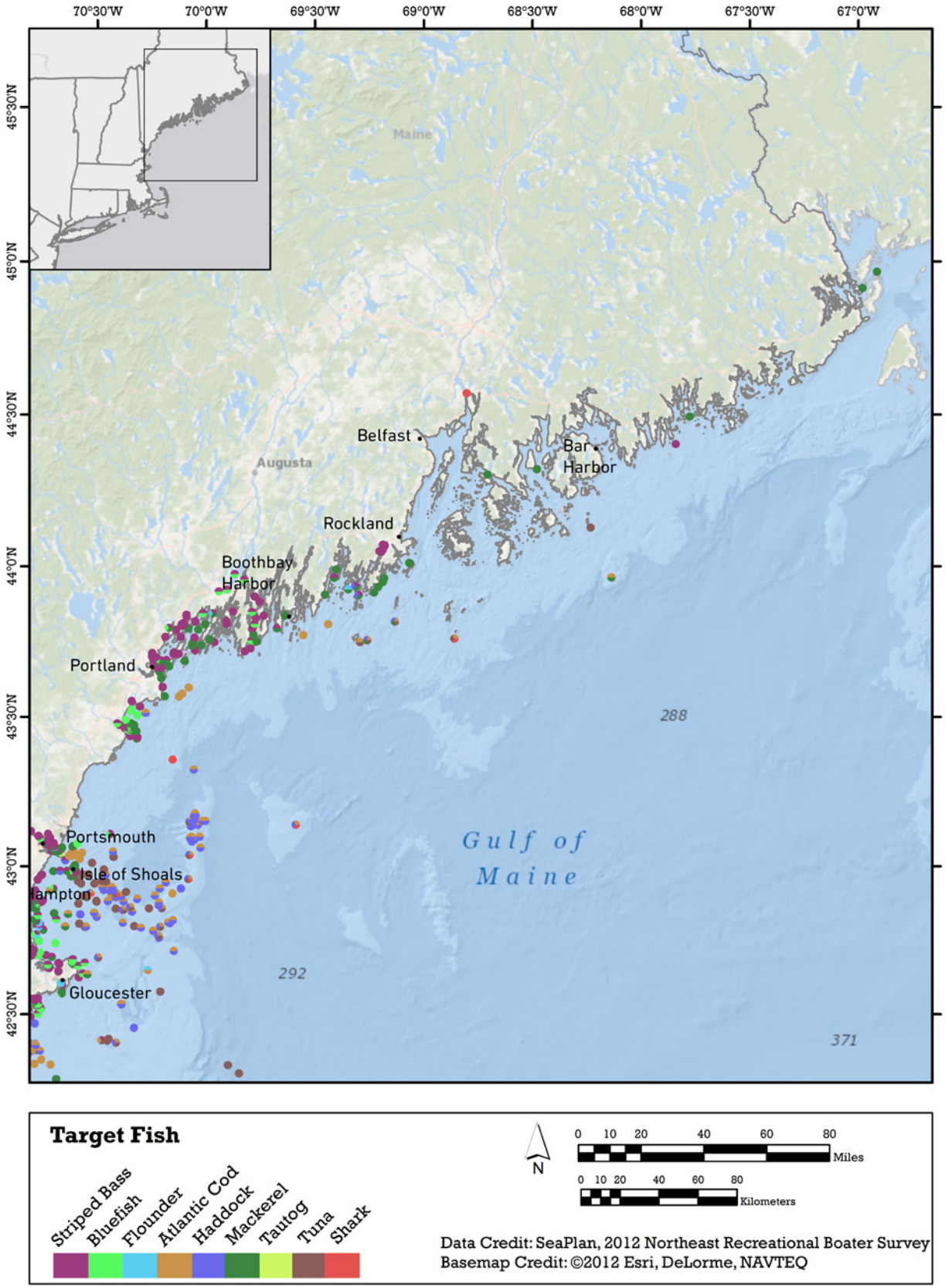


Figure 47: Maine Map - Type of Fish Targeted While Fishing

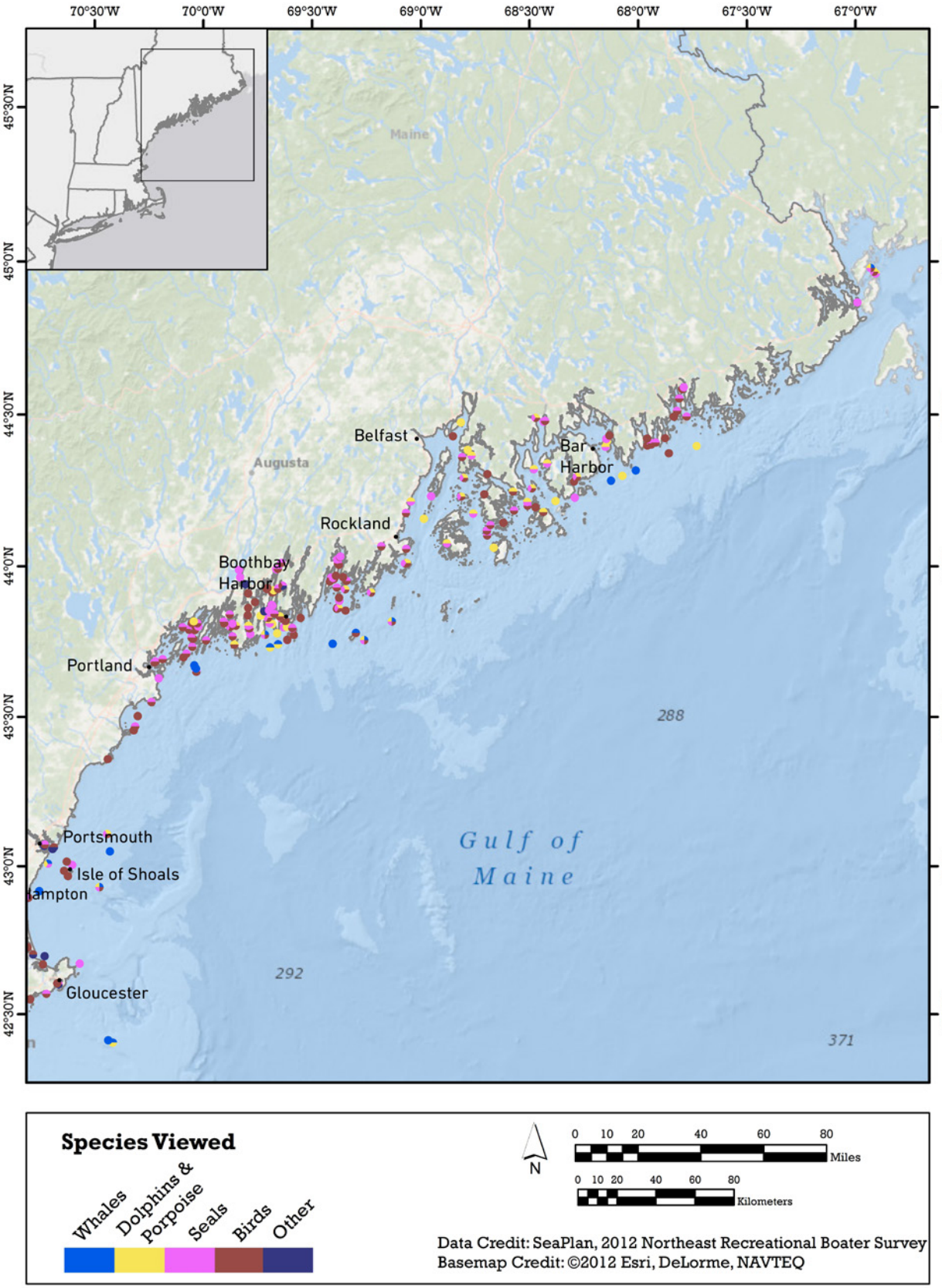


Figure 48: Maine Map – Type of Species Viewed While Wildlife Viewing

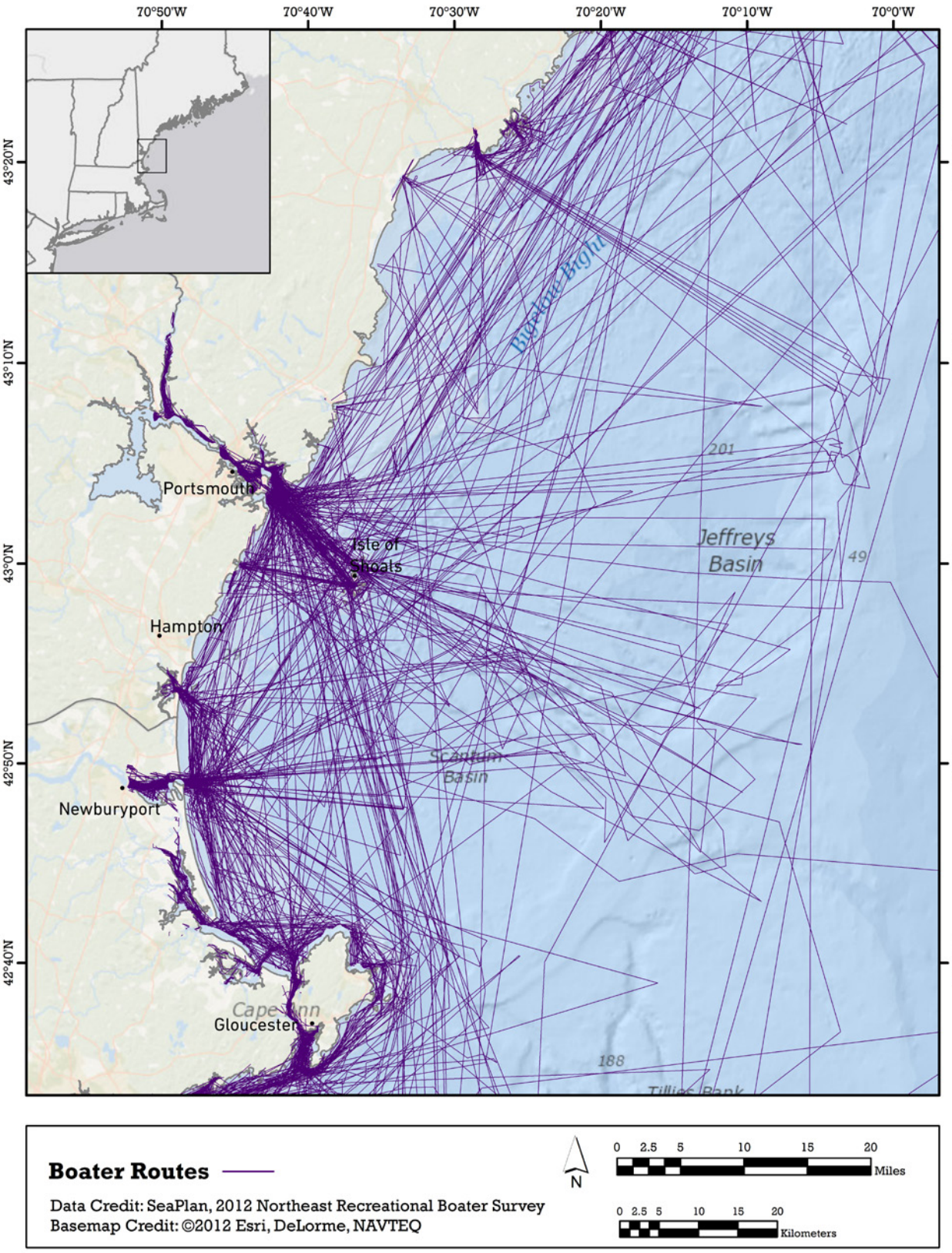


Figure 49: New Hampshire Map - Boating Routes

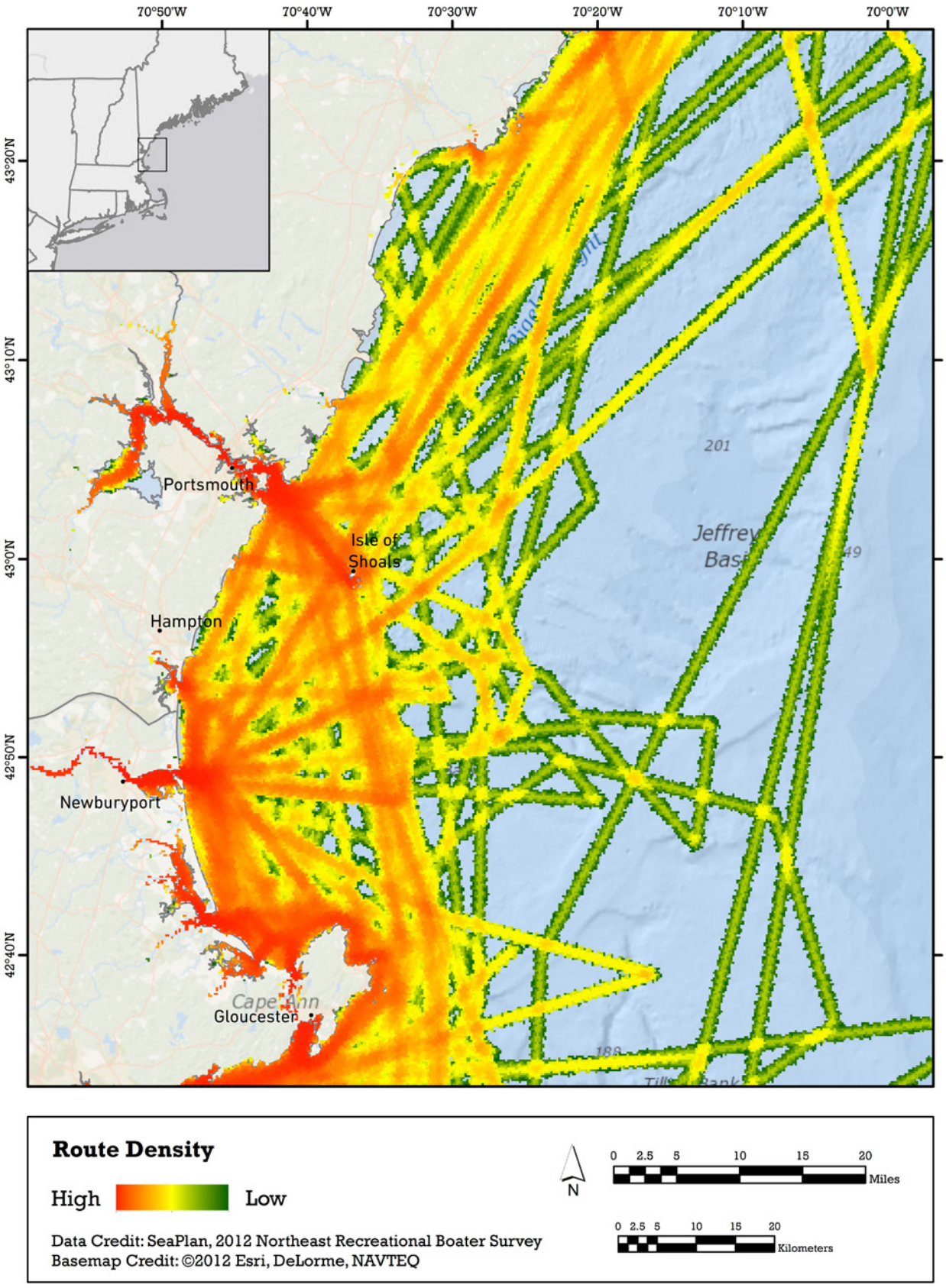


Figure 50: New Hampshire Map – Boating Density

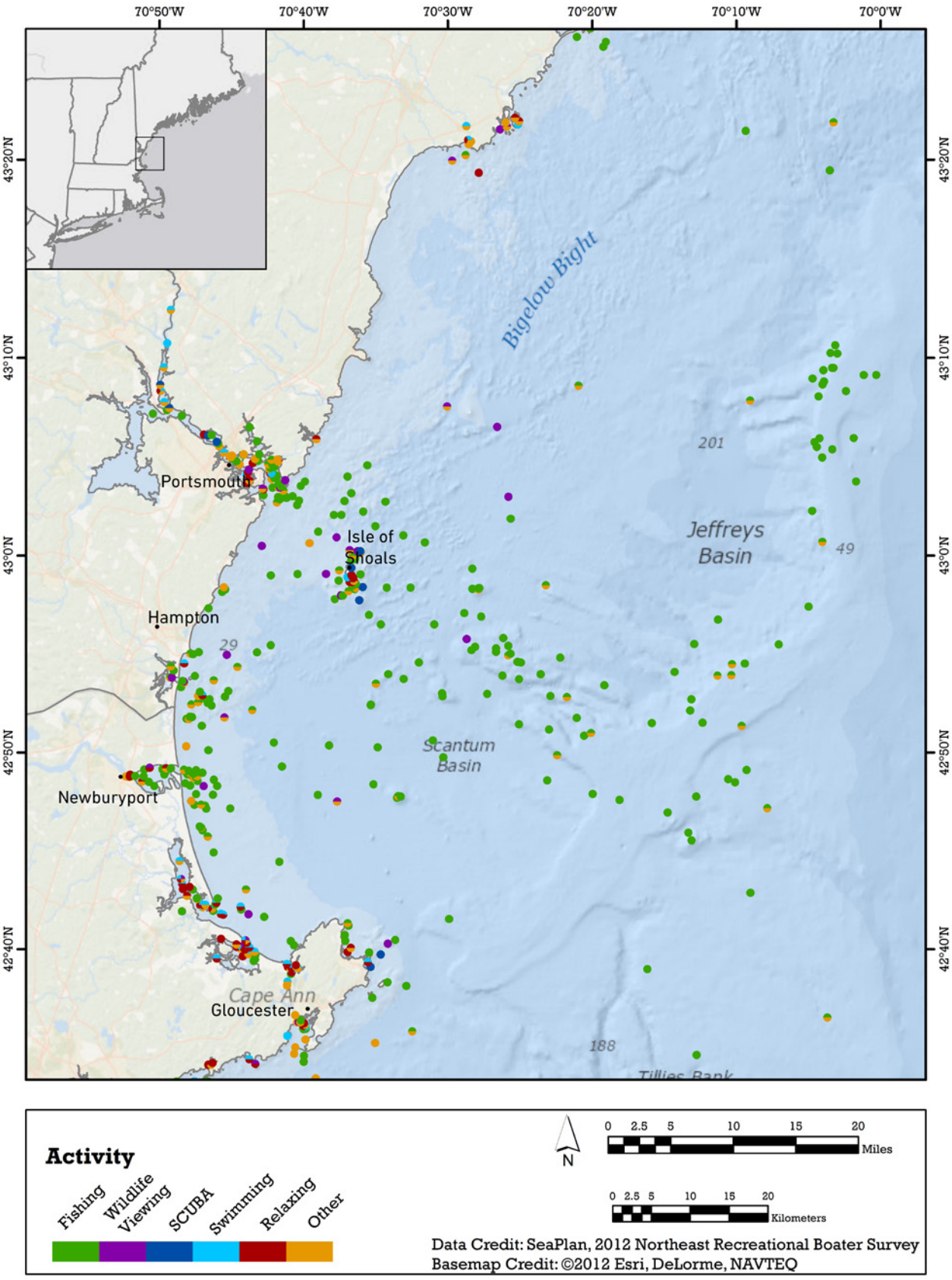


Figure 51: New Hampshire Map - Activity Points

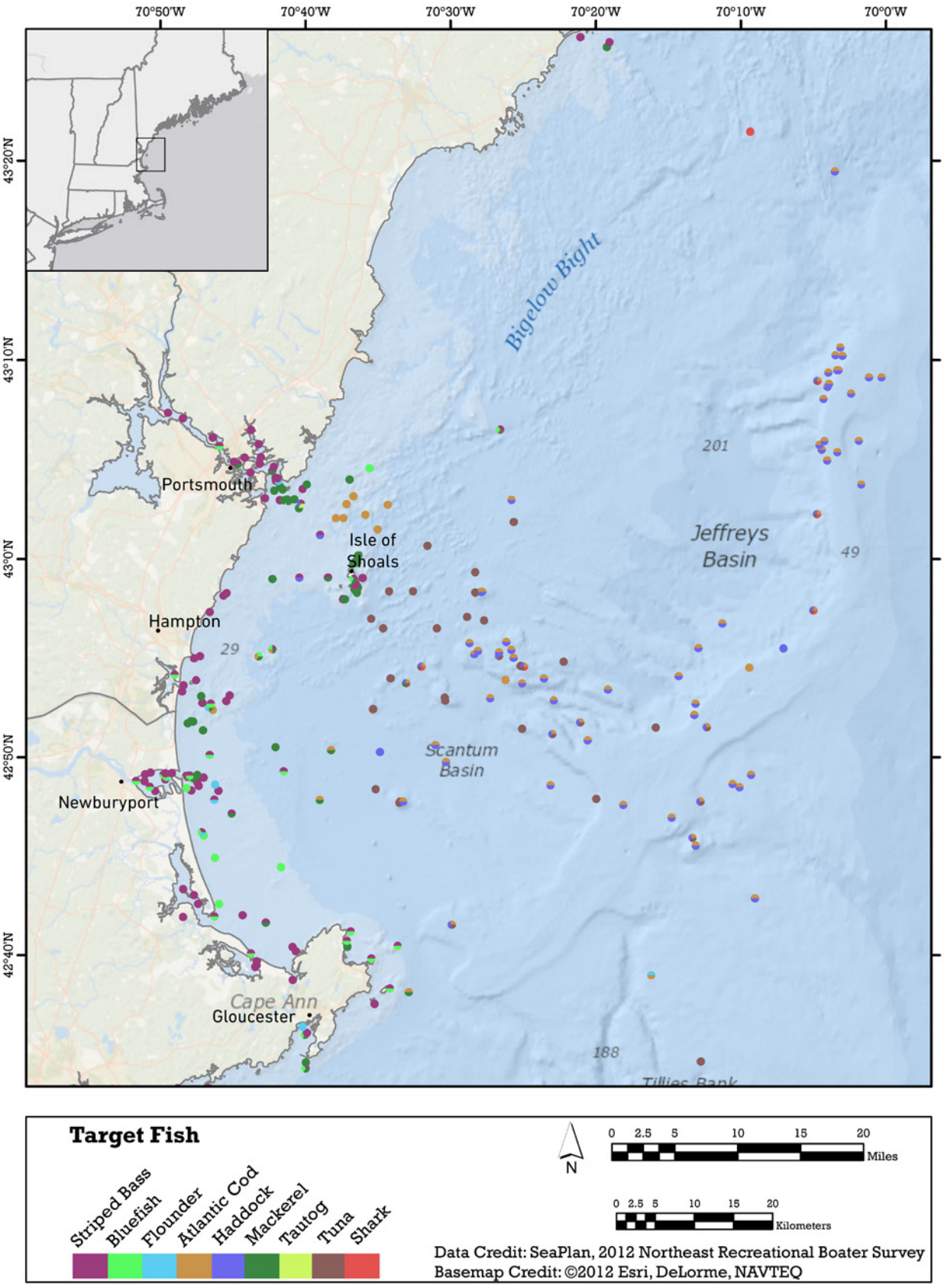


Figure 52: New Hampshire Map - Type of Fish Targeted While Fishing

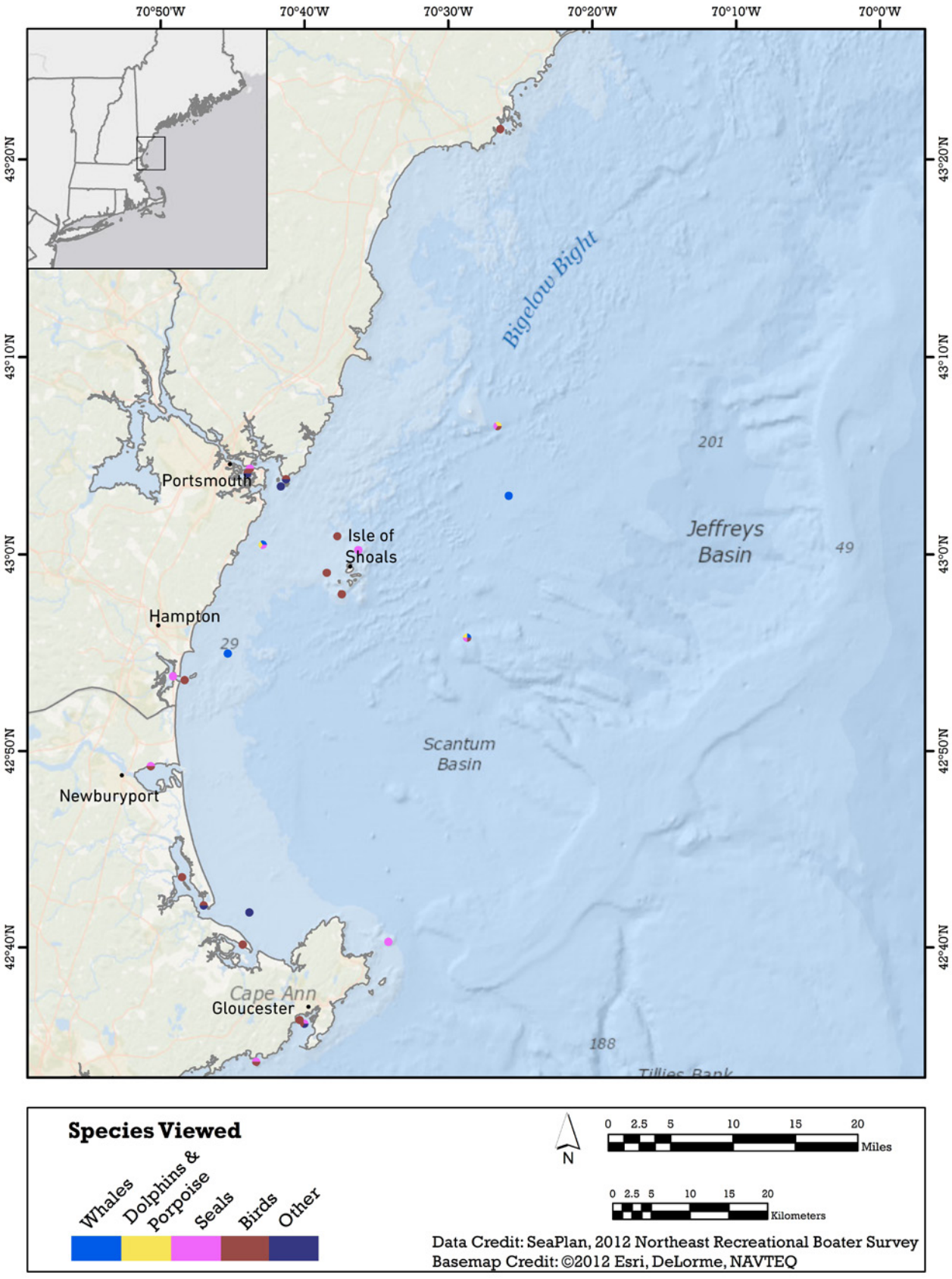


Figure 53: New Hampshire Map - Type of Species Viewed While Wildlife Viewing

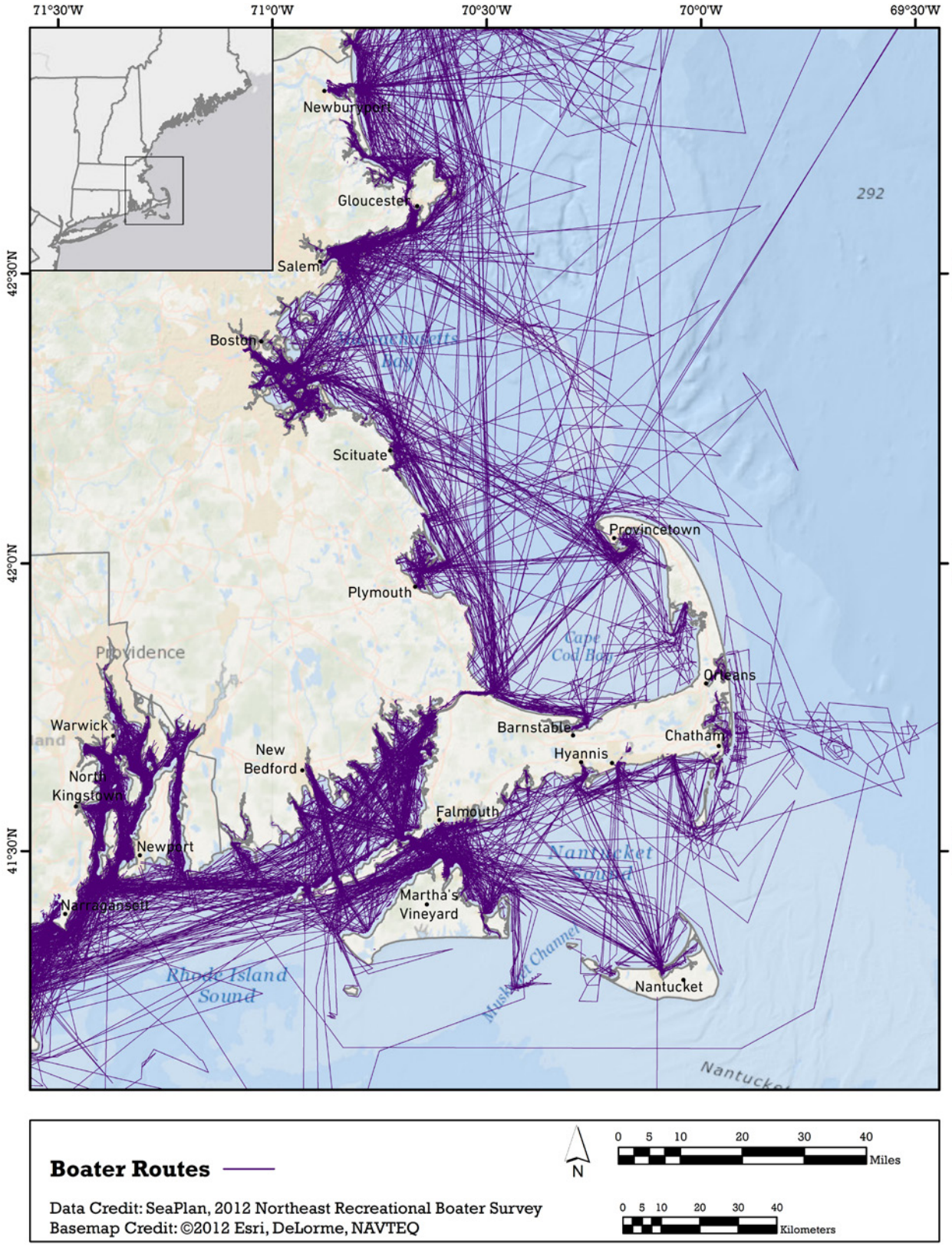


Figure 54: Massachusetts Map - Boating Routes

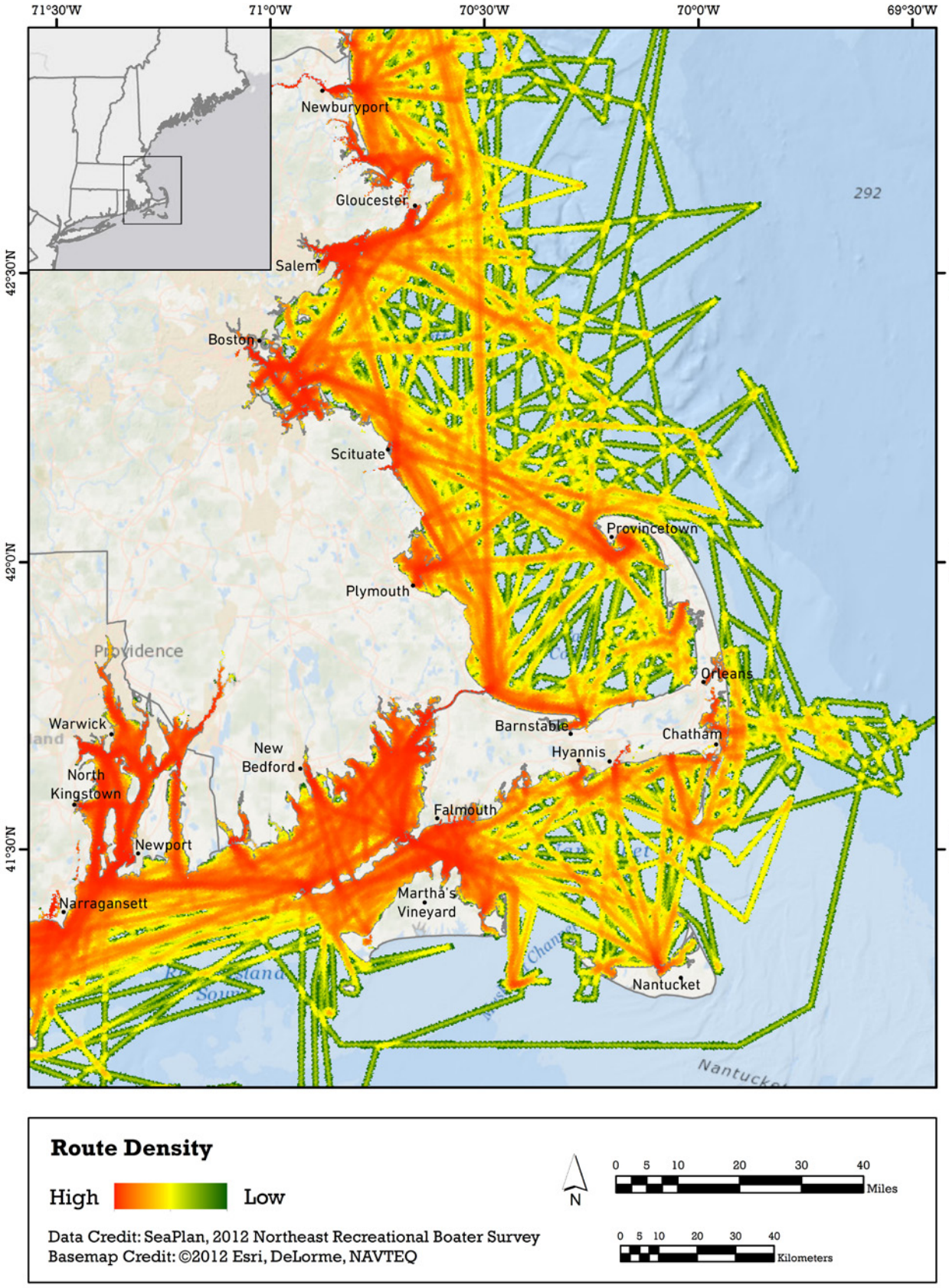


Figure 55: Massachusetts Map - Boating Density

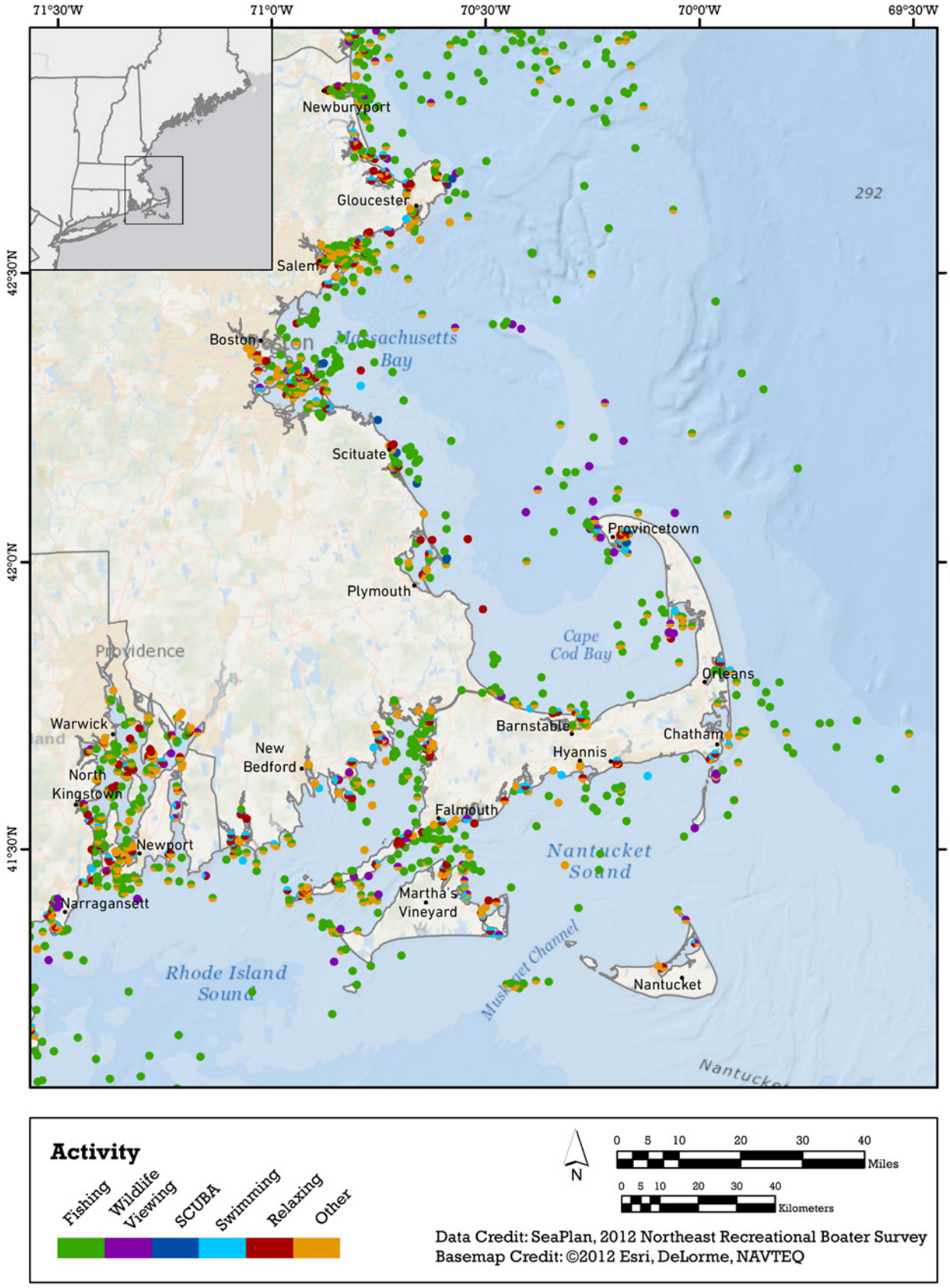


Figure 56: Massachusetts Map - Activity Points

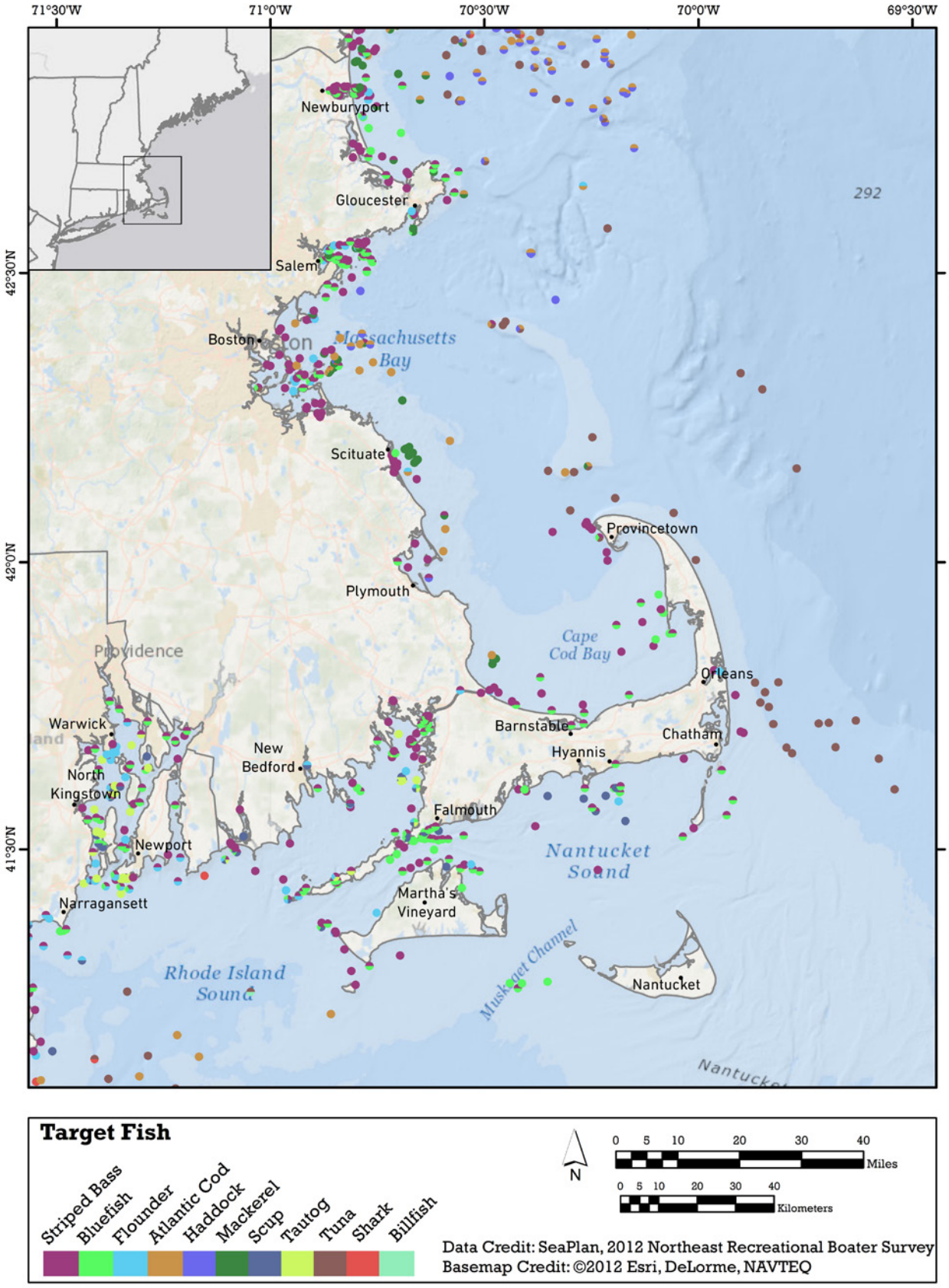


Figure 57: Massachusetts Map - Type of Fish Targeted While Fishing

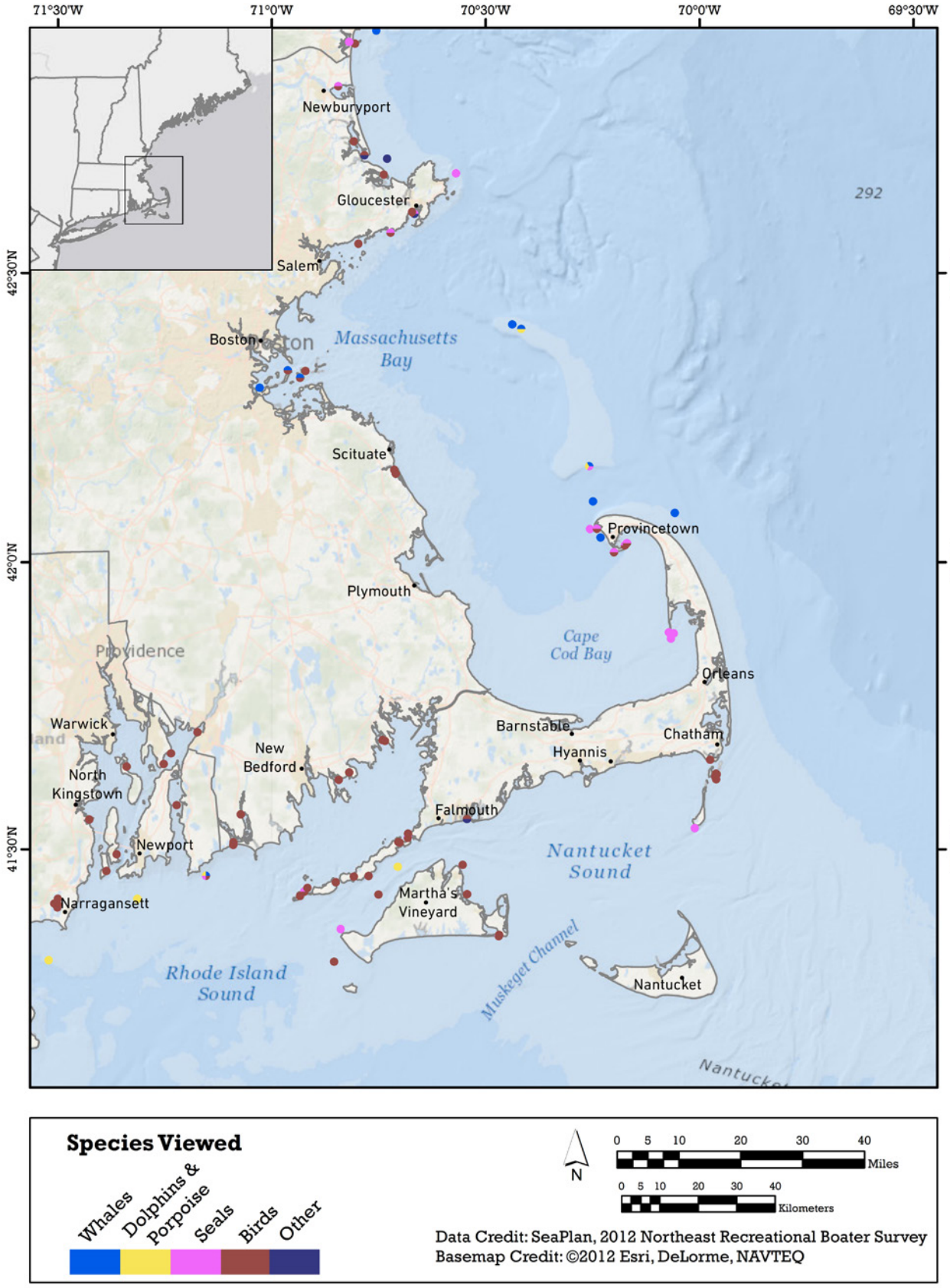


Figure 58: Massachusetts Map - Type of Species Viewed While Wildlife Viewing

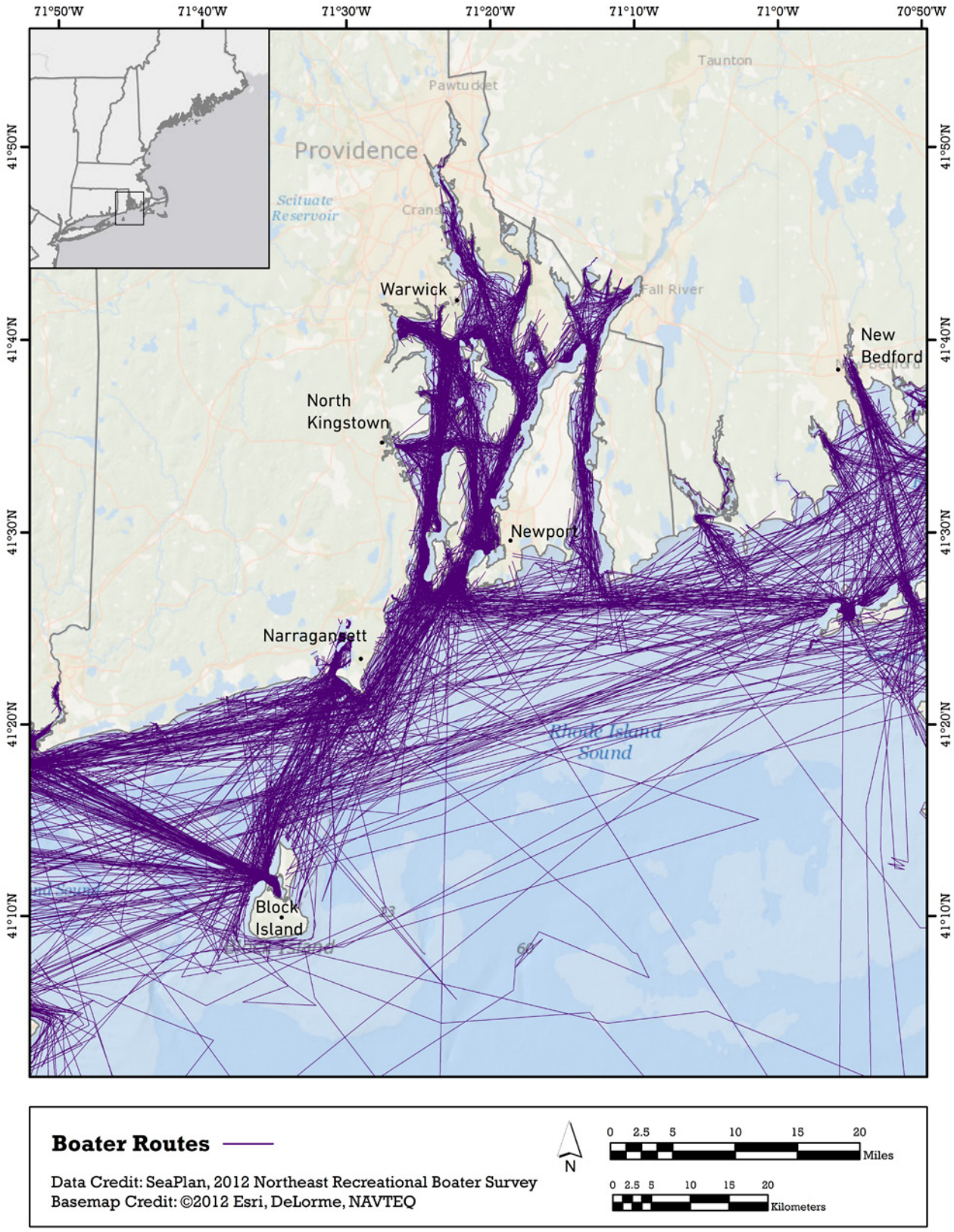


Figure 59: Rhode Island Map - Boating Routes

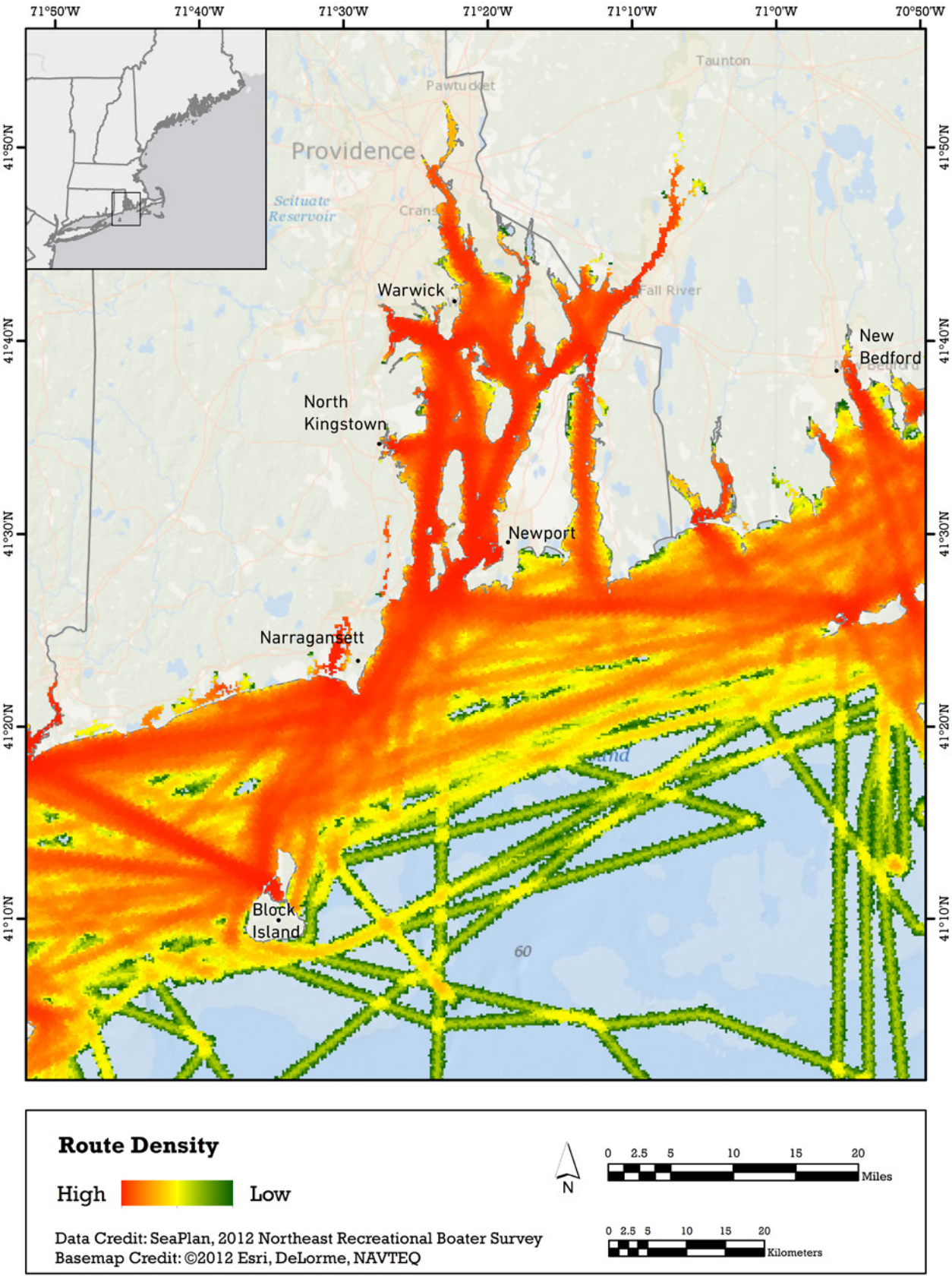


Figure 60: Rhode Island Map - Boating Density

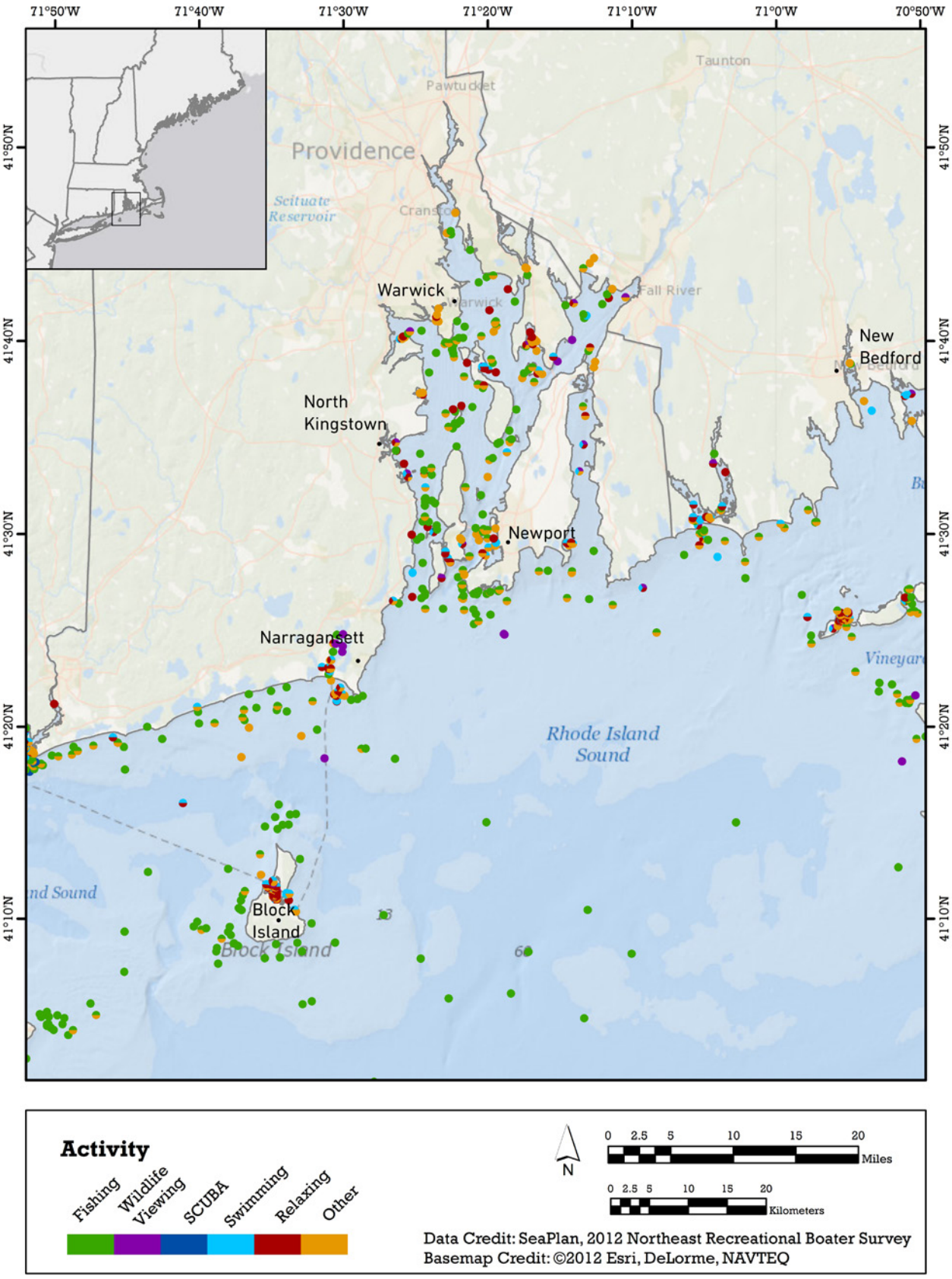


Figure 61: Rhode Island Map - Activity Points

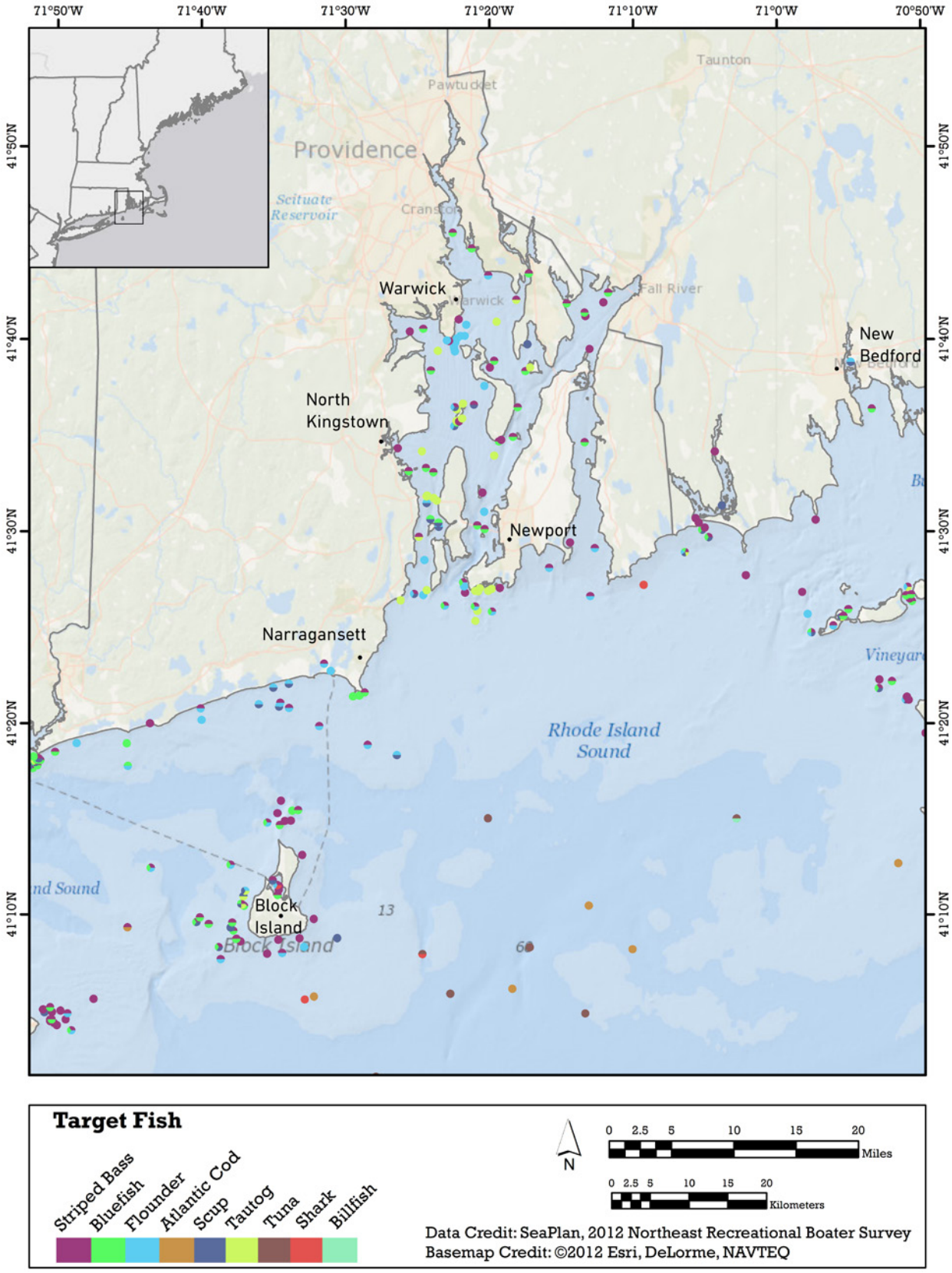


Figure 62: Rhode Island Map - Type of Fish Targeted While Fishing

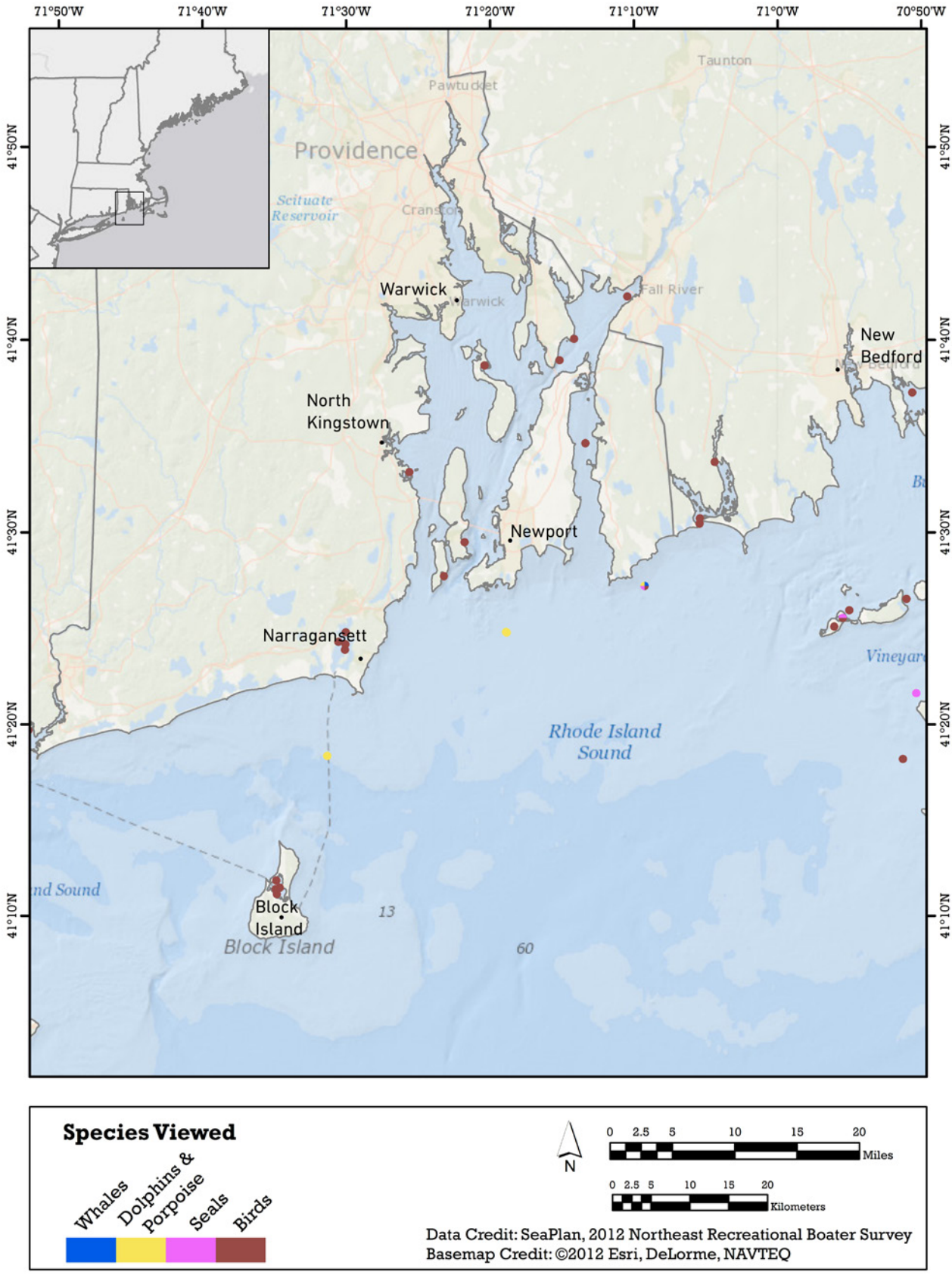


Figure 63: Rhode Island Map - Type of Species Viewed While Wildlife Viewing

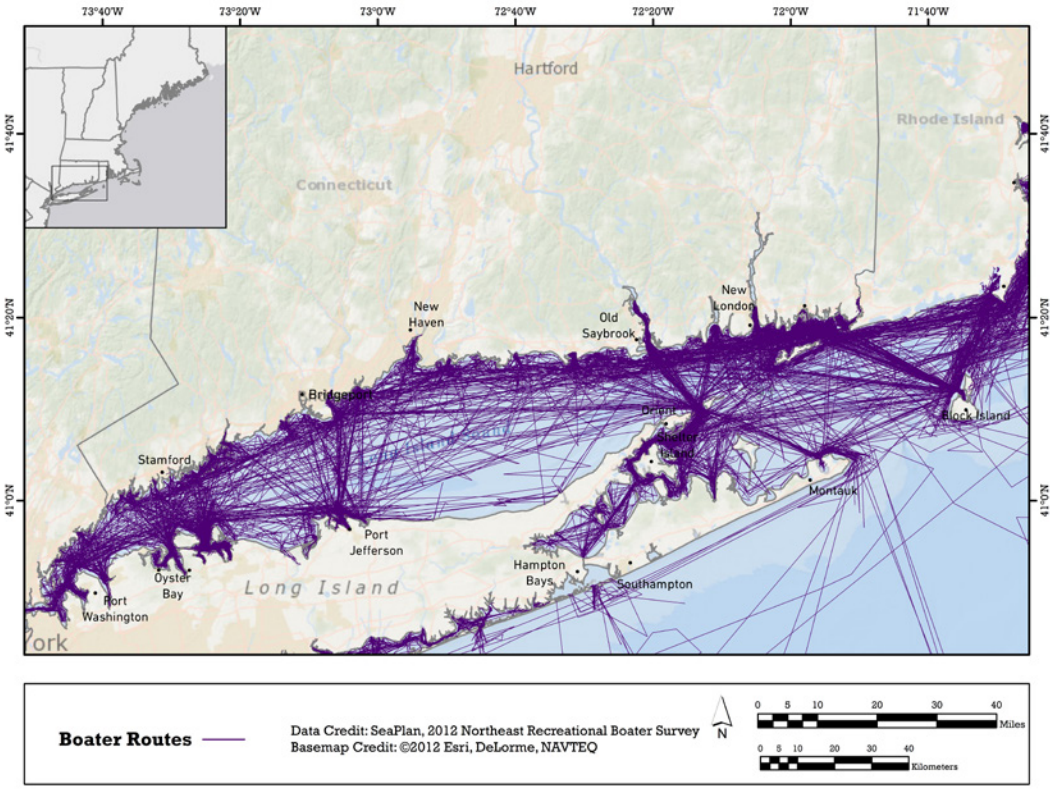


Figure 64: Connecticut and Long Island, NY Map - Boating Routes

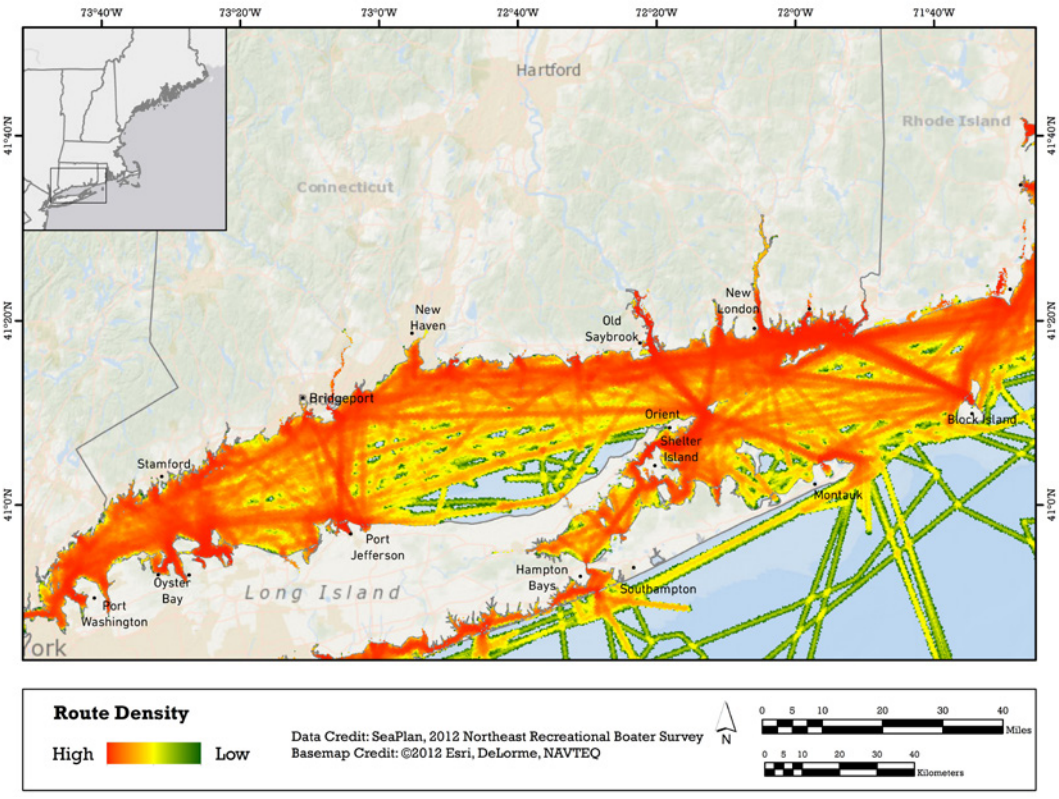


Figure 65: Connecticut and Long Island, NY Map - Boating Route Density

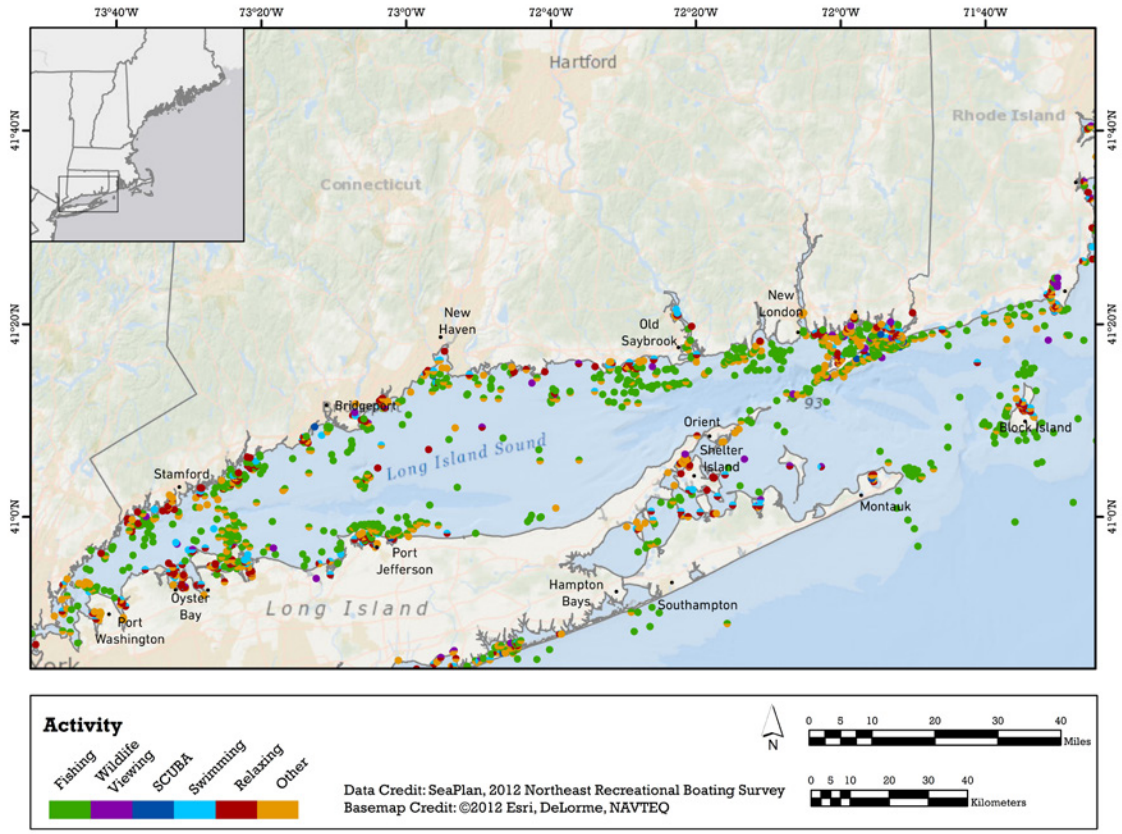


Figure 66: Connecticut and Long Island, NY Map - Activity Points

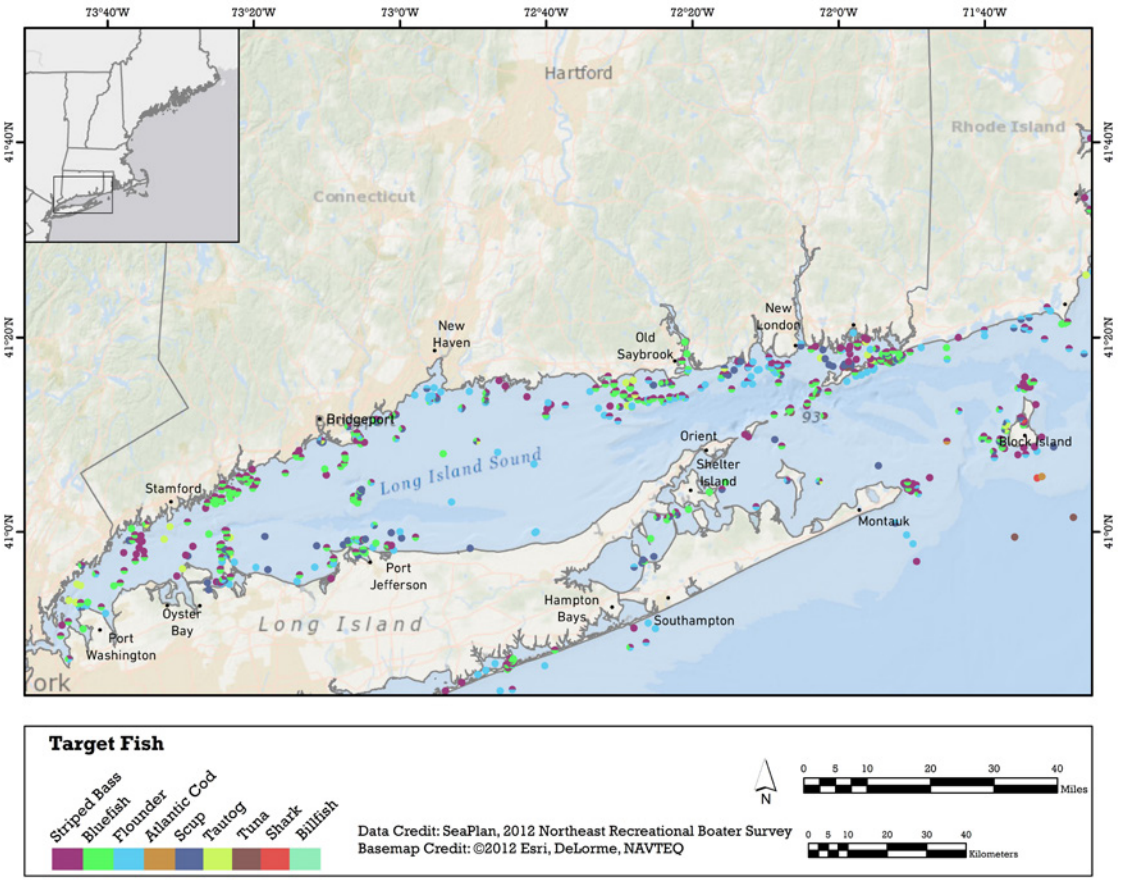


Figure 67: Connecticut and Long Island, NY Map - Type of Fish Targeted While Fishing

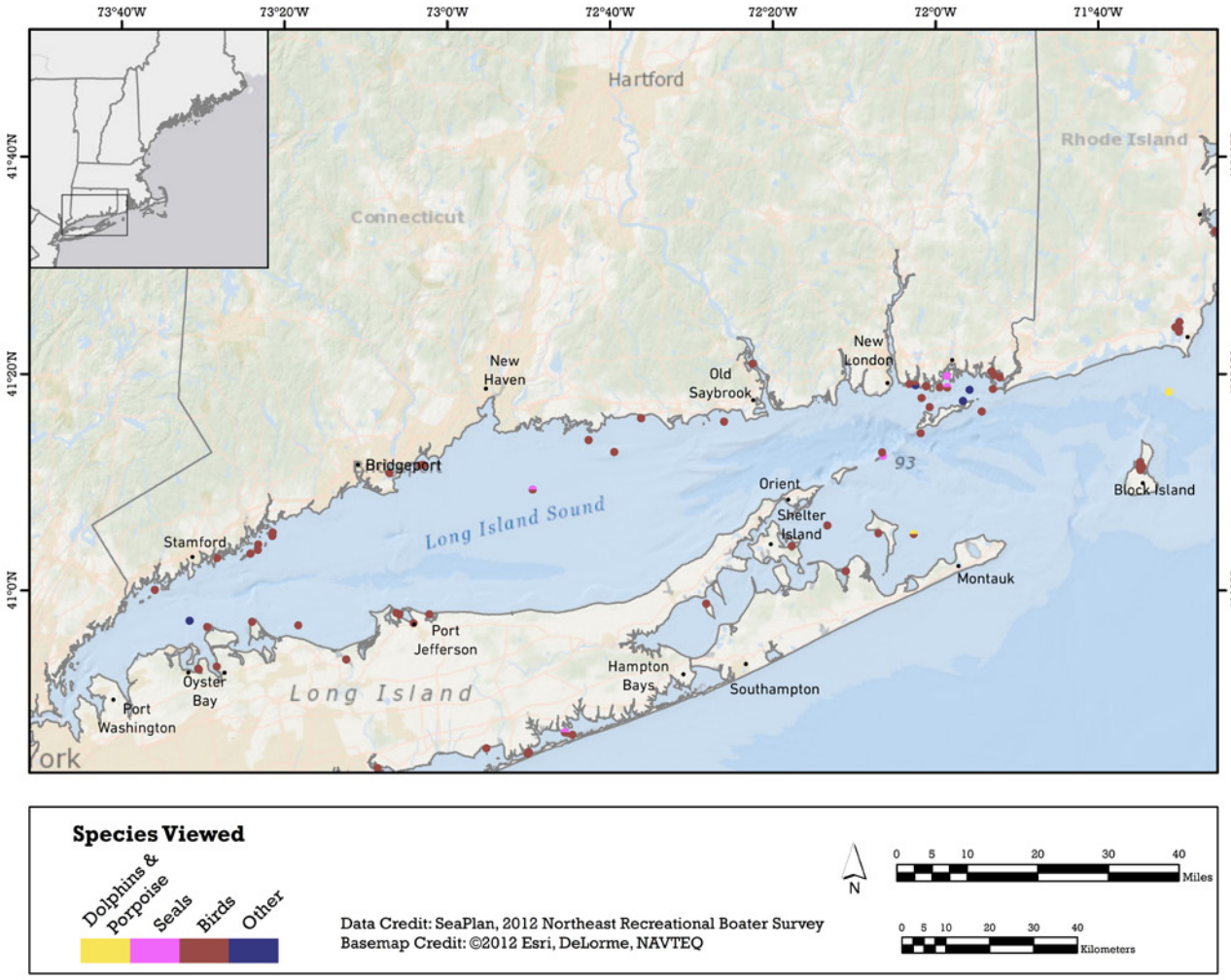


Figure 68: Connecticut and Long Island, NY Map - Type of Species Viewed While Wildlife Viewing

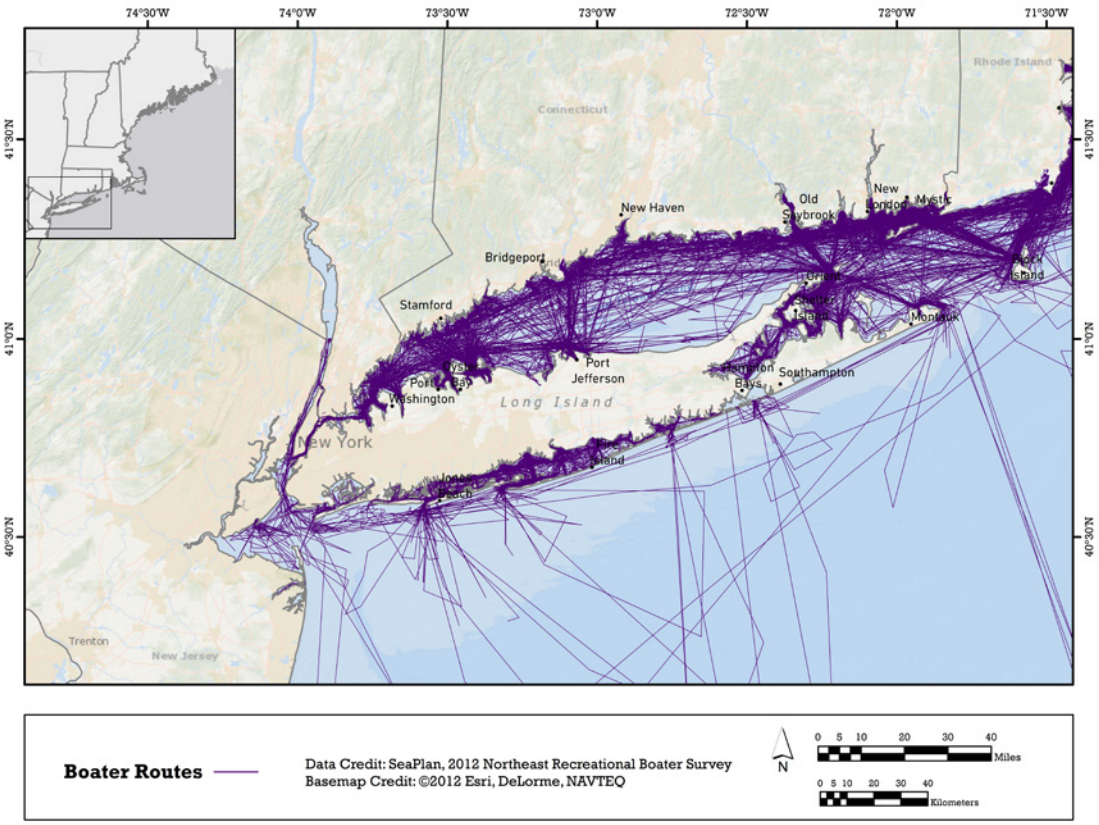


Figure 69: New York Map - Boating Routes

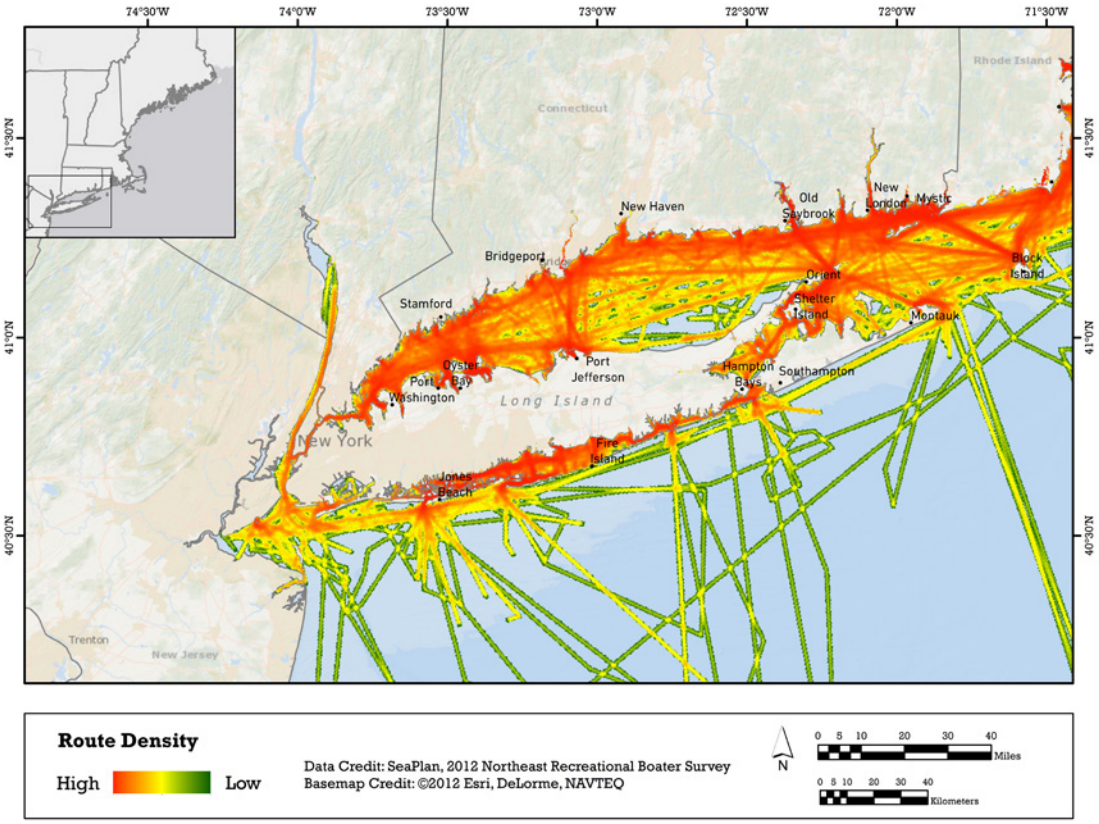


Figure 70: New York Map - Boating Density

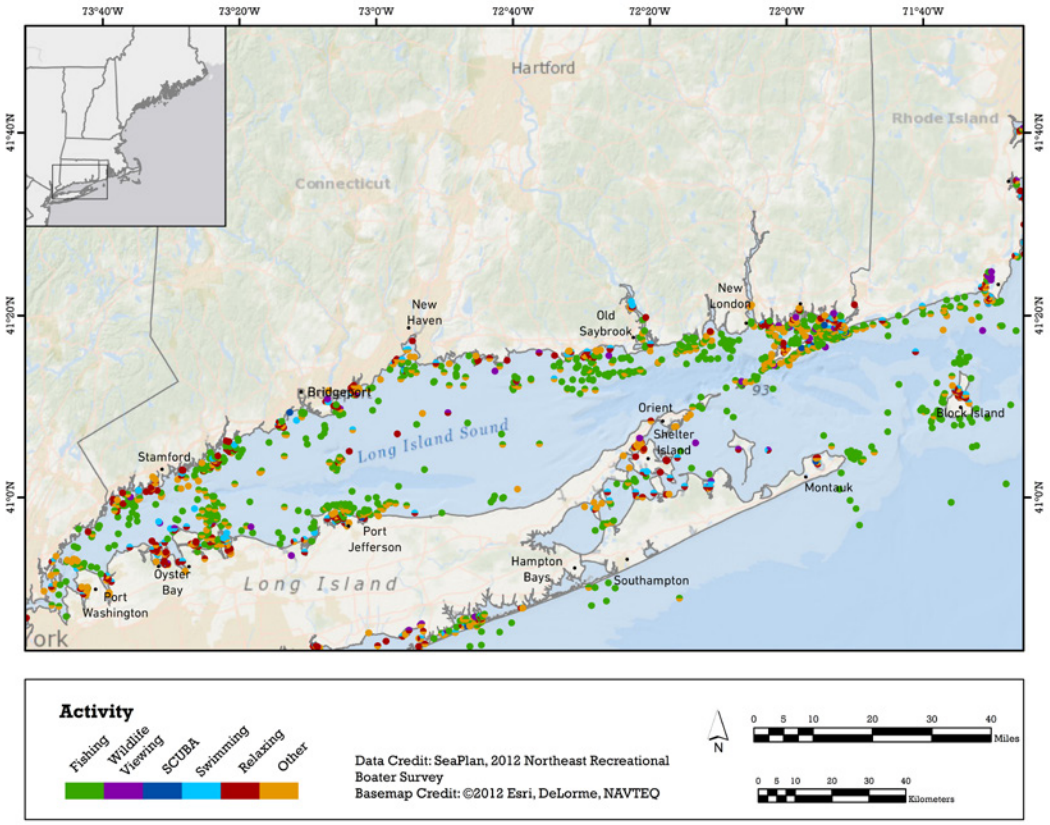


Figure 71: New York Map - Activity Points

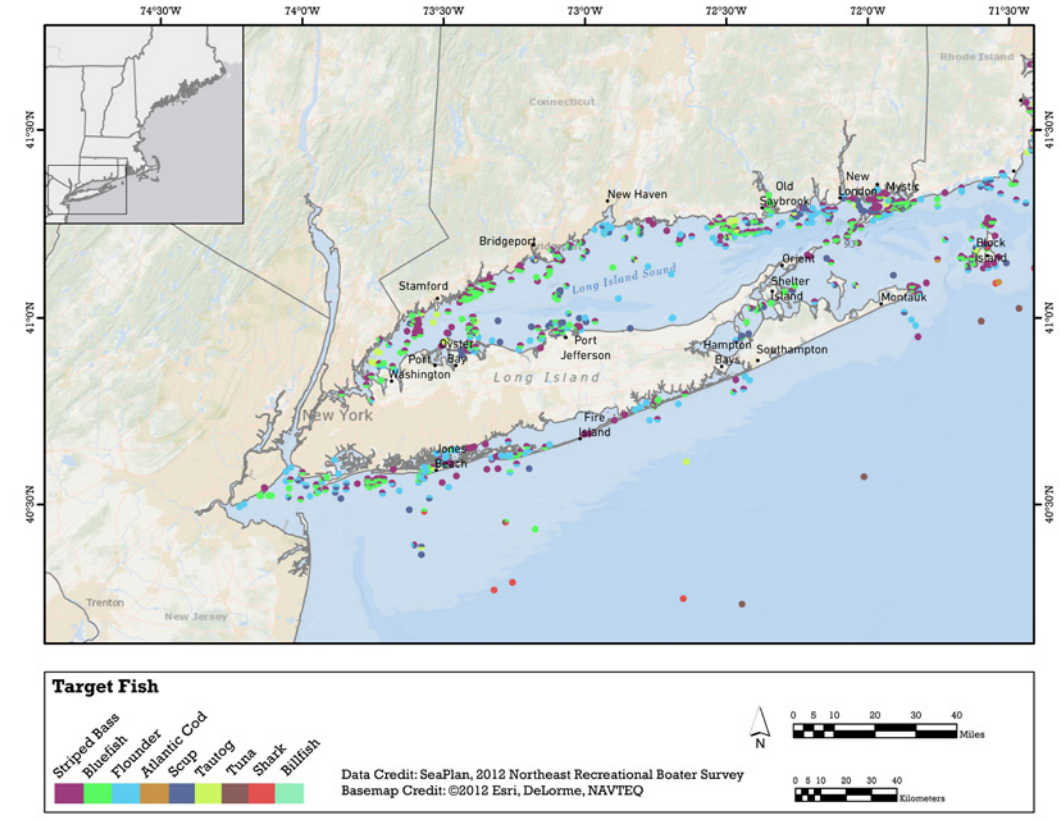


Figure 72: New York Map - Type of Fish Targeted While Fishing

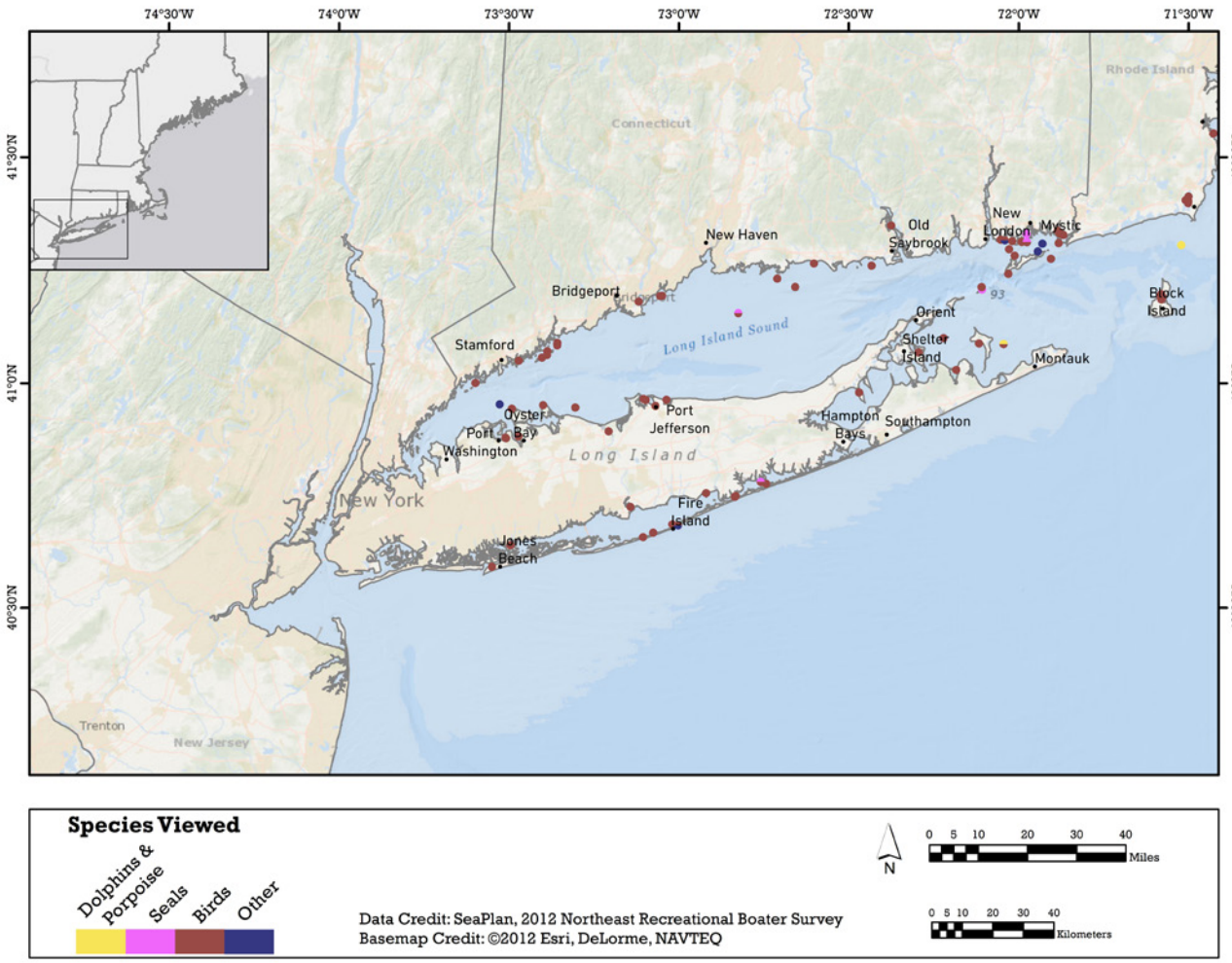


Figure 73: New York Map - Type of Species Viewed While Wildlife Viewing

4.4.2 Analysis

Boating Routes

Survey results of 5,114 boating routes (which include both the routes from the regional random sample and the supplemental sample) show that most boating activity occurred close to shore, with over half (52.4%) of the routes occurring within one mile of the coastline. Notable exceptions to the general pattern of near-shore density occur in northeastern Long Island, off the northeast side of Cape Cod, and in Saco Bay, where there are gaps in boater density.

As can be seen in Figures 31 - 73, particularly high areas of boating activity occurred along commonly known boating routes, such as from:

- Narragansett, RI to Block Island, RI;
- New London, CT to Block Island, RI;
- Bridgeport, CT to Port Jefferson, NY;
- Connecticut River, CT to Orient, NY;
- Narragansett RI to Cuttyhunk, MA;
- Boston Harbor, MA to Provincetown, MA;
- Portsmouth NH to Isle of Shoals; and
- Rockland, ME to Bar Harbor, ME.

In addition, a number of less direct, more complex routes can be found. For example, in Maine, an area of high route density extends from Rockland, following a winding path around some of the smaller islands in Penobscot Bay, and diverges in the Deer Island area. One branch of the routes continues towards Bar Harbor while the other branch diverts to the north towards the Penobscot River.

Not surprisingly, high levels of boating activity also occurred in semi-protected bays and harbors off of major cities, such as:

- Maine: Portland Harbor
- New Hampshire: Portsmouth Harbor
- Massachusetts: Boston Harbor
- Rhode Island: Narragansett Bay
- Connecticut: New London Harbor
- New York: New York Harbor

On a month to month basis, June, July and August are the busiest months on the water; September and May have similar boating activity, and October has the least amount of boating activity. This can be seen visually in Figures 38-43, and graphically in Figures 74 and 75.

Activity Points

The survey collected 4,635 activity points (which include both the points from the regional random sample and the supplemental sample), with some points representing only one activity, and others representing multiple activities. The following analysis focuses on the:

- Type, number and location of activities reported;
- Type of fish species targeted; and
- Type of wildlife viewed.

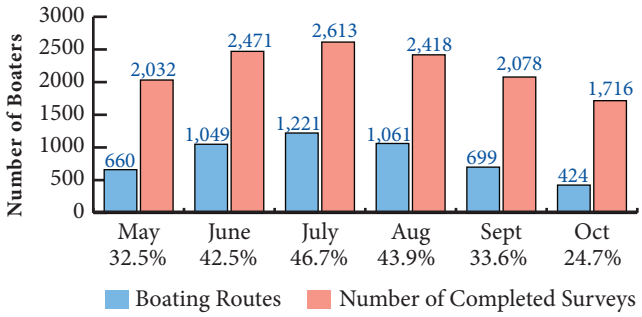


Figure 74: Total Number of Boating Routes Plotted Each Month

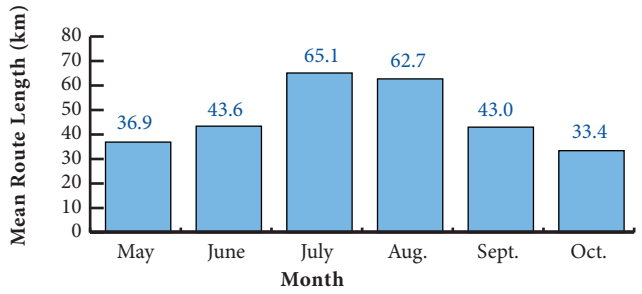


Figure 75: Average (mean) Boating Route Length Plotted by Month

Type, Number and Location of Activities Reported

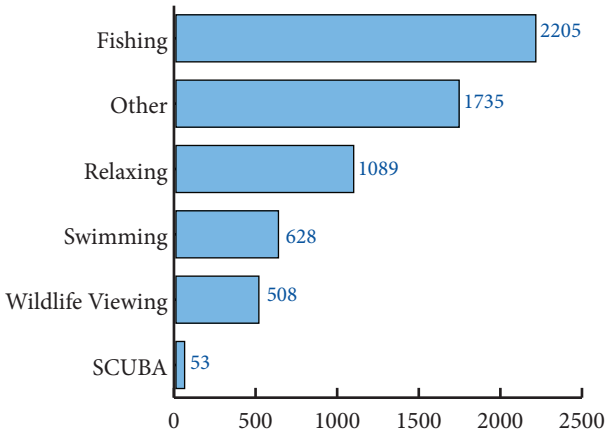
The types of boating-based activities in the Northeast reported on by boaters are displayed in Figure 76.

Fishing was the most frequently recorded activity for recreational boaters, and accounted for nearly half of the plotted activity points. Fishing is the predominant activity throughout the region, except in Maine, where other activities such as wildlife viewing, relaxing and other activities outnumber fishing. In some cases, fishing hot spots corresponded with natural features conducive to good fishing conditions, such as on Jeffreys Ledge.

Relaxing and swimming were the second and third most recorded activities, respectively. These activities occurred most frequently around the coast and often in conjunction with one another. Wildlife viewing points occurred consistently throughout coastal Maine, but occurred more sporadically in other states. Clusters of wildlife viewing activity points can be found throughout the region, including near Stellwagen Bank and Monomoy, MA. SCUBA diving was only documented 13 times, out of over 4,500 activity points. The last activity category was "other". This category encompassed a wide range of activities, including sightseeing, clamming, and buying food and supplies. These points occurred throughout the region.

The number of activity points by location (e.g., [STATE][23] water including 3 nautical miles from shoreline, outside of Northeast state waters[24]) and type of activity can be found in Figure 77.

Boaters plotted the most activity points in Maine state waters (1,153), and the second most in Massachusetts state waters (1,061).



*Note: Boaters plotted a total of 4,635 activity points, but 6,218 activities are displayed in this figure. These numbers are not additive because boaters may have participated in more than one activity at a point.

Figure 76: Most Commonly Reported Activity Points in the Northeast

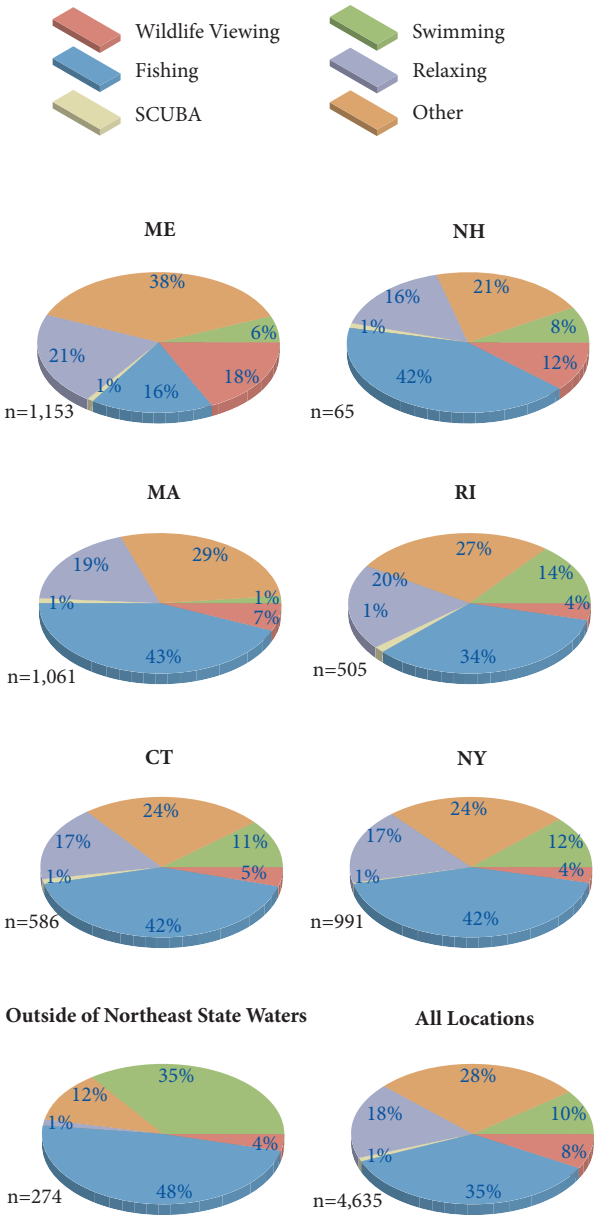


Figure 77: Number and Type of Activity Points Plotted by Location (state and outside of Northeast state waters)

23 Insert name of state. Includes water from the shoreline to 3 nautical miles offshore.

24 Outside of Northeast state waters refers to waters outside of 3 nautical miles from the shoreline of Northeast states, and all water surrounding other states not in the Northeast (e.g., New Jersey).

Type of Fish Species Targeted

Boaters who plotted a fishing activity point were asked about the "fish species targeted" at that location. See Figure 78 for the type of fish species targeted by location.

Of the 2,205 fishing activity points collected through this survey, 46% of the points indicated that the fishermen were targeting Striped Bass (*Morone saxatilis*). Striped Bass was also the most commonly targeted fish species in each state's waters. The second most commonly targeted fish species in state waters of Rhode Island, Connecticut and New York was Summer Flounder (*Paralichthys dentatus*), and in Maine and New Hampshire it was Atlantic Mackerel (*Scomber scombrus*). Second most commonly targeted fish species in Massachusetts was Bluefish (*Pomatomus saltatrix*). Outside of Northeast state waters, Atlantic Cod (*Gadus morhua*) and Atlantic Bluefin Tuna (*Thunnus thynnus*) were the first and second most commonly targeted fish species respectively.

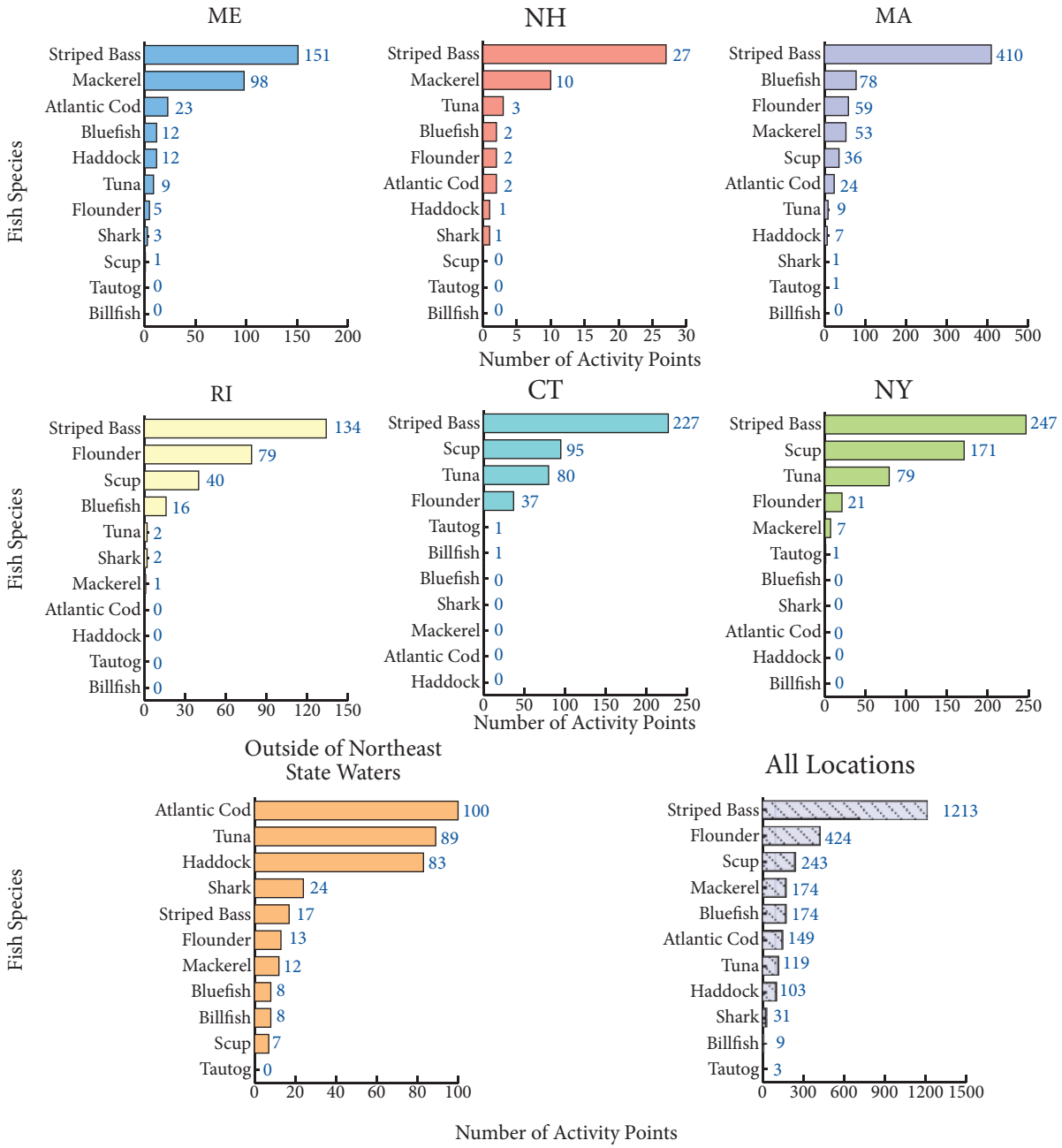


Figure 78: Type of Fish Species Targeted by Location (state, federal or non-US waters)

Type of Wildlife Viewed

Birds were the most common type of wildlife viewed, accounting for 51% of all wildlife viewing activity points. Figure 79 displays the type of wildlife viewed (e.g., birds, seals) by location.

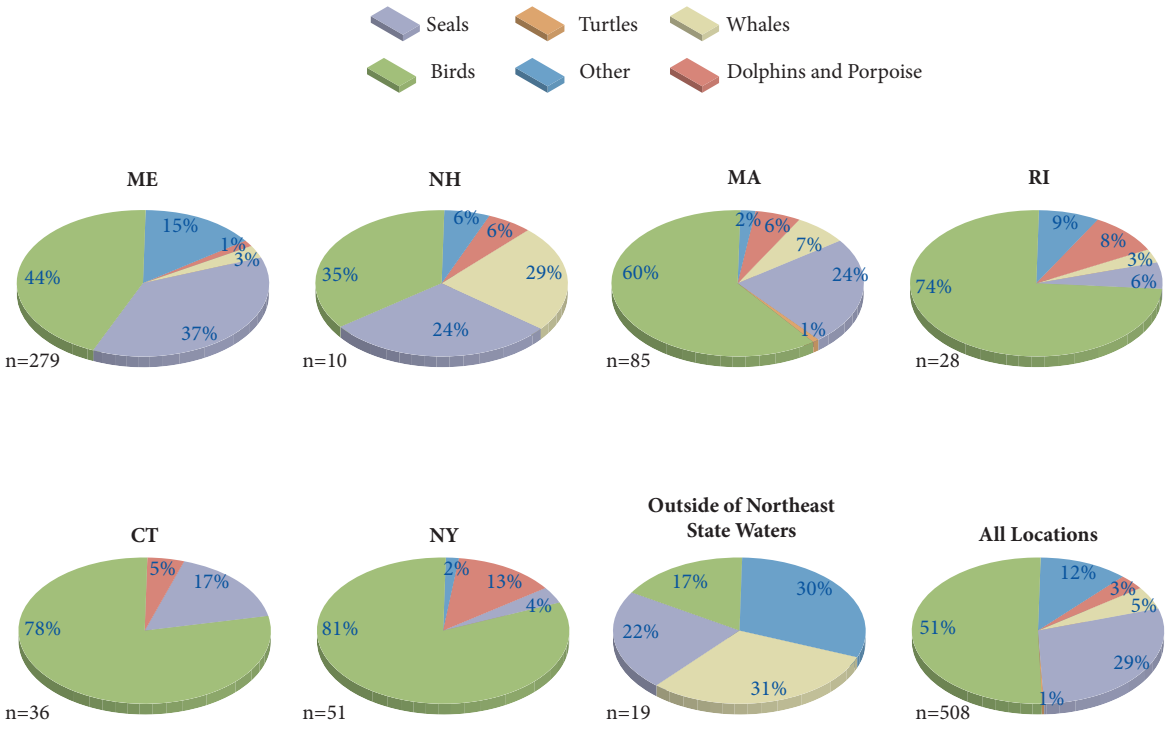


Figure 79: Type of Species Viewed While Wildlife Viewing by Location (State or Federal/other States)

4.5 Economic Impact

The results of the economic analyses are divided into four categories:

4.5.1. Number of Boat Trips and Visits in 2012: Economists extrapolated the number of boat trips and visits made by survey participants during 2012 to the broader population of coastal Northeast boaters to estimate annual boating expenditures for the population as a whole.

4.5.2. Direct Spending Impacts: Includes the money directly spent by boaters, generalized to the population.

4.5.3. Modeled Impacts - Direct, Indirect, and Induced: Includes the money spent directly by boaters generalized to the population, and the additional economic effects generated by the direct spending on the economy (indirect and induced).

4.5.4. Year-round Jobs: The number of year-round jobs (12 months of full time work) supported by marine recreational boaters' spending.

4.5.1 Number of Boat Trips and Visits in 2012

As described in Section 3.4.3 "Economic Data: Analysis", to develop economic impact estimates, economists extrapolated the number of trips and visits made by the sample of boaters during the 2012 boating season to the broader population it is designed to characterize. As shown by Figure 80, this amounts to approximately 907,000 boating trips in ocean and coastal waters 2012 for the registered/documented marine boaters of the six states (for calculations, see Chapter 3: "Methodology").

The majority of these trips are attributed to boaters with vessels registered in New York (347,679 trips) and Massachusetts (262,649 trips), followed by Connecticut (141,998 trips). Boaters with vessels registered in New Hampshire have the fewest trips (22,000 trips). Figure 81 shows most trips during the summer months of June, July, and August, and the fewest trips in the first and last months of the boating season (May and October).

As can be seen in Figure 82, once extrapolated to the Northeast population, boaters with vessels registered/documented in the six-state region visited their boats approximately 564,000 times in 2012 (for calculations, see Chapter 3: "Methodology"). Boaters with vessels registered in New York (214,063 visits) and Massachusetts (145,967 visits) accounted for the most visits, followed by Connecticut (112,776 visits). Boaters with vessels registered in New Hampshire made the fewest visits (9,984 visits).

Figure 83 shows that visits followed a declining trend over the course of the boating season, with the most visits occurring in May and the fewest visits occurring in October.

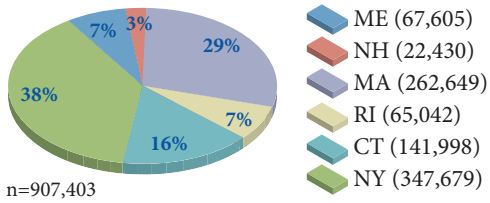


Figure 80: Distribution of Trips in 2012 by State of Vessel Registration/documentation

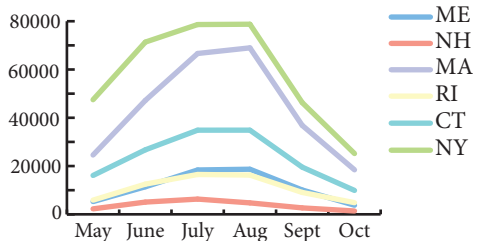


Figure 81: Total Trips Per Month by State of Vessel Registration

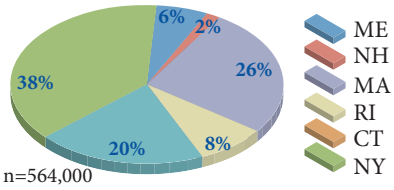


Figure 82: Distribution of Visits in 2012 by State of Vessel Registration

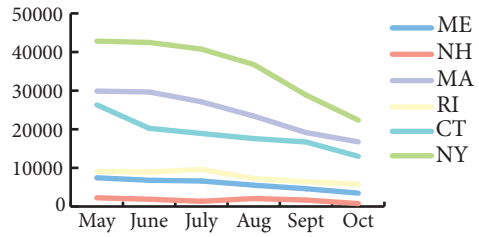


Figure 83: Total Visits per Month by State of Vessel Registration

4.5.2 Direct Spending Impacts

After calculating the number of trips and visits, economists extrapolated from the results of the survey to estimate annual boating expenditures for the population as a whole. Regarding the direct impacts of boaters' expenditures, Tables 17 and 18 show that marine boaters with vessels registered in the six-state region spent almost $2 billion on recreational boating and related activities in 2012. The greatest share of this spending occurred in the states of New York ($840 million) and Massachusetts ($489 million), followed by Connecticut ($334 million). Boaters spent most of their money in the same state where their boat was registered.

Figure 84 provides a graphical display of Tables 19 and 20, showing the direct expenditures in 2012 by state of expenditure and vessel of registration.

Table 17: Boating Expenditures in 2012 (by State of Expenditure)

State of Expenditure	Trip-Related	Visit-Related	Yearly Related	Total	Percent
ME	$17,681,146	$26,596,674	$80,855,767	$125,133,586	6.3%
NH	$5,653,124	$14,156,785	$22,900,662	$42,710,571	2.1%
MA	$71,259,964	$66,185,446	$351,400,314	$488,845,724	24.5%
RI	$17,933,654	$29,127,383	$87,249,923	$134,310,959	6.7%
CT	$32,403,308	$47,345,929	$254,323,363	$334,072,599	16.7%
NY	$110,292,613	$197,983,452	$532,169,189	$840,445,254	42.1%
Other States*	$4,270,660	$6,198,914	$19,388,620	$29,858,194	1.5%
TOTAL	**$259,494,469**	**$387,594,582**	**$1,348,287,838**	**$1,995,376,889**	**100%**

Table 18: Boating Expenditures in 2012 (by State of Expenditure and State of Boat Registration)

By Boaters Registered In	State Where Expenditures Occurred							
STATE	ME	NH	MA	RI	CT	NY	OTHER	TOTAL
ME	$104,253,849	$1,290,222	$1,903,591	$166,686	$363,403	$121,746	$4,045,806	$112,145,304
NH	$4,945,498	$36,198,259	$3,254,536	$57,396	$63,140	$61,726	$1,099,081	$45,679,635
MA	$14,910,597	$5,017,483	$470,105,557	$8,047,425	$4,147,983	$2,342,764	$10,635,143	$515,206,952
RI	$481,209	$35,477	$8,628,585	$106,651,902	$7,007,519	$227,721	$4,044,156	$127,076,569
CT	$338,795	$169,130	$3,813,889	$8,908,218	$309,831,579	$14,738,117	$5,062,646	$342,862,373
NY	$203,638	$0	$1,139,567	$10,479,334	$12,658,975	$822,953,180	$4,971,362	$852,406,055
TOTAL	$125,133,586	$42,710,571	$488,845,724	$134,310,959	$334,072,599	$840,445,254	$29,858,194	$1,995,376,889

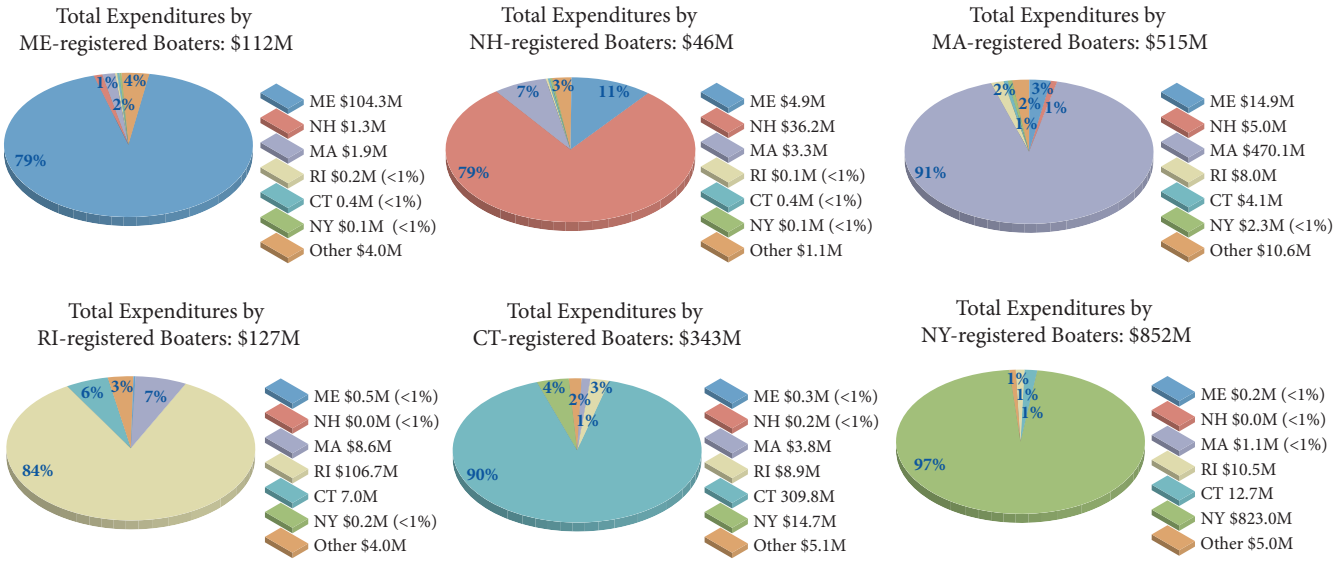


Figure 84: Direct Boating Expenditures in 2012 by State of Expenditure and State of Vessel Registration (in millions of dollars)

Figure 85 illustrates the distribution of expenditures by state and category. The categories include:

- Trip-related expenditures: Expenditures made by boaters to support a boating trip on the water (e.g., boat fuel, groceries).
- Visit-related expenditures: Expenditures made by boaters to support a visit to the boat (no trip on the water)
- Yearly expenditures: Expenditures made by boaters throughout the course of the year not related to a boat trip or visit (e.g., storage, taxes, loans).

As the figure indicates, yearly expenditures accounted for the majority of spending in all states. The amount of money spent on boat trips, visits, and yearly purchases per state can be found below, including the specific items purchased by boaters

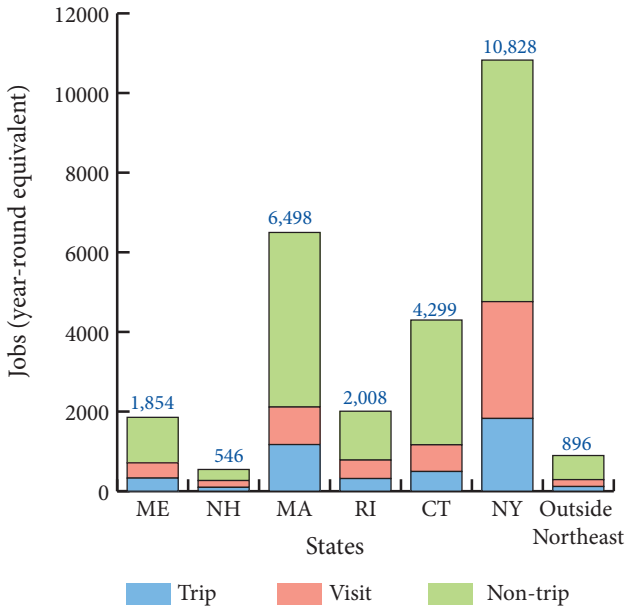


Figure 85: Total Boating Expenditures in 2012 by State where Expenditure Occurred (in millions of dollars)

Trip-related expenditures

As shown in Table 19, boaters spent more than $259 million on trip-related expenditures in 2012. Most of these expenditures occurred in New York ($110 million) and Massachusetts ($71 million), followed by Connecticut ($32 million).

Figure 85 shows that most of the $259 million in trip-related expenditures was spent on boat fuel ($83 million), equipment and maintenance ($50 million), and restaurant meals ($44 million).

As shown in Figure 86, trip-related expenditures averaged $1,151 per vessel over the course of the boating season. This amount includes average spending of $368 on boat fuel, $220 on equipment and repairs, and $195 on restaurant meals.

Figure 87 summarizes the distribution of trip expenses by state and type of purchase.

Table 19: Summary of Money Spent on Trip-Related Expenditures

By Boaters Registered In	State Where Expenditures Occurred							
State	ME	NH	MA	RI	CT	NY	Other	Total
ME	$11,646,208	$116,836	$76,923	$10,963	$9,959	$47,266	$162,845	$12,070,999
NH	$920,438	$4,002,446	$641,104	$99	$30,528	$18,674	$175,382	$5,788,671
MA	$4,649,706	$1,349,101	$66,145,135	$2,274,856	$927,602	$765,013	$474,244	$76,585,656
RI	$143,611	$26,173	$1,331,533	$10,429,121	$146,413	$135,769	$5,141	$12,217,760
CT	$293,444	$158,567	$2,604,803	$4,275,182	$26,755,995	$5,332,254	$54,320	$39,474,565
NY	$27,739	$0	$460,467	$943,433	$4,532,812	$103,993,638	$3,398,728	$113,356,817
TOTAL	**$17,681,146**	**$5,653,124**	**$71,259,964**	**$17,933,654**	**$32,403,308**	**$110,292,613**	**$4,270,660**	**$259,494,469**

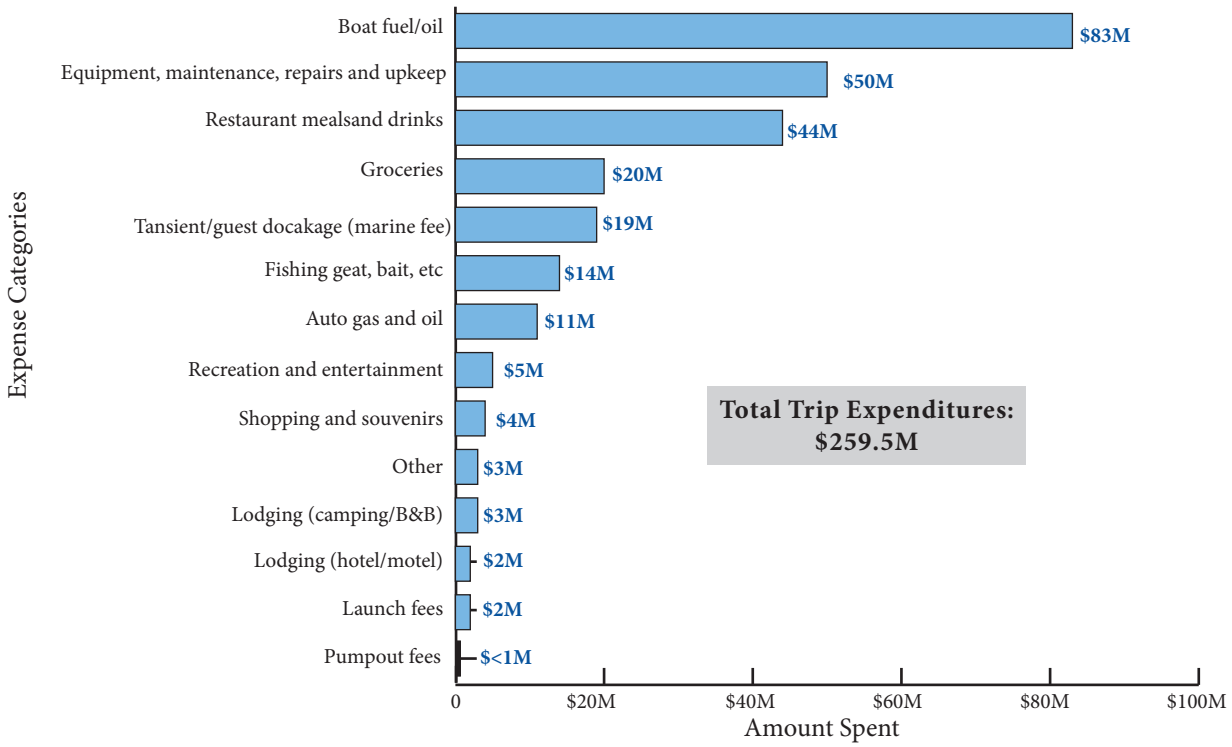


Figure 85: Amount Spent on Trip-Related Expenditures in 2012 (Millions of Dollars)

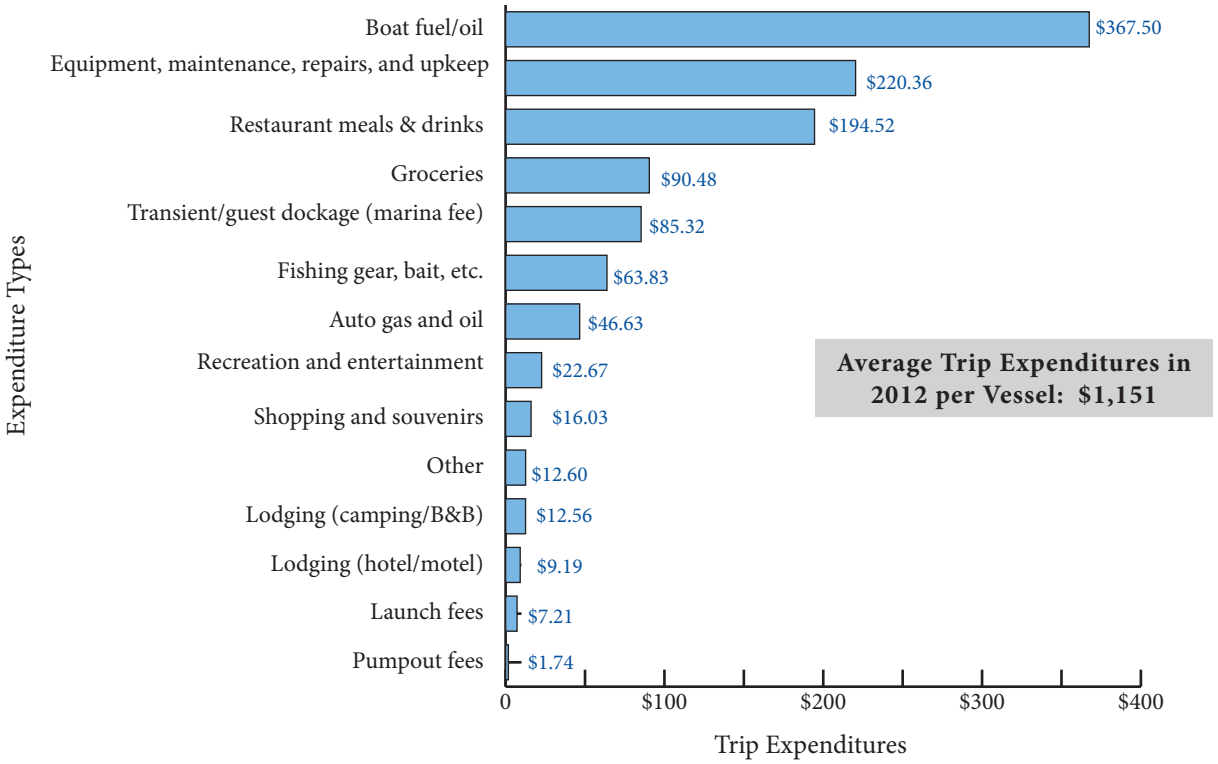


Figure 86: Average Amount Spent on Trip-Related Expenditures in 2012 ($ per Registered Vessel)

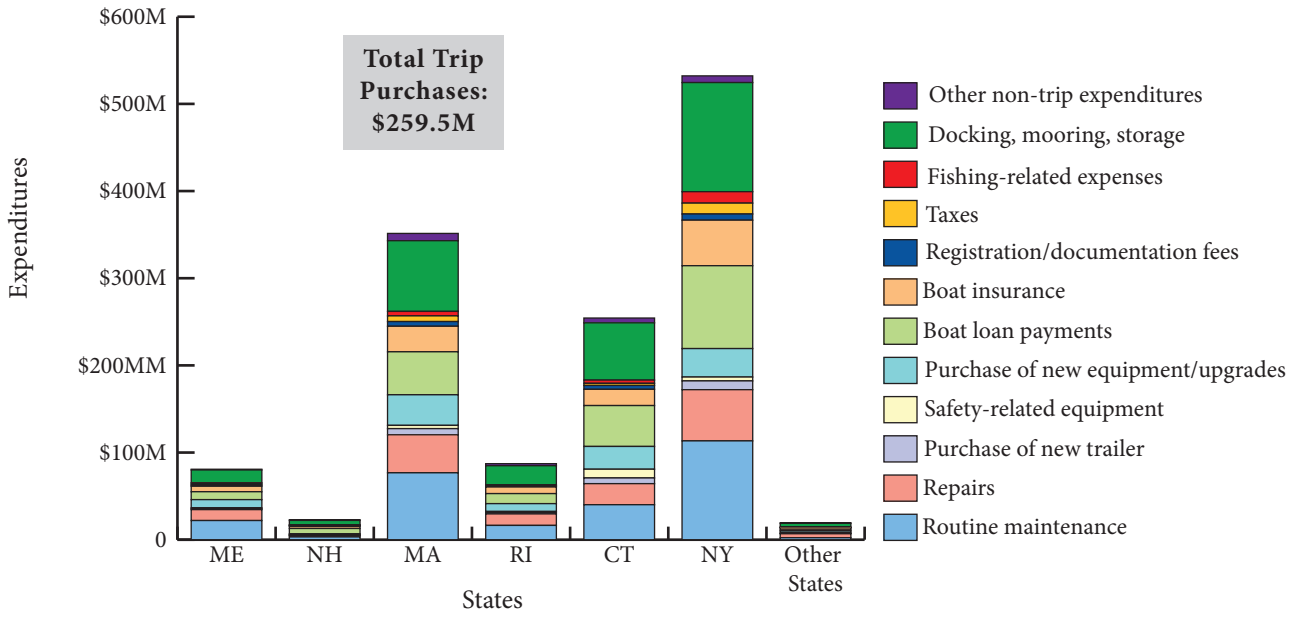


Figure 87: Trip-Related Expenditures in 2012 by State (Millions of Dollars)

Visit-related Expenditures

Table 20 demonstrates that boaters with vessels registered in the six-state region spent almost $388 million on visit-related expenditures in 2012. The majority of these expenditures occurred in New York ($198 million), Massachusetts ($66 million), and Connecticut ($47 million). Boaters with vessels registered in New York ($203 million), Massachusetts ($71 million), and Connecticut ($53 million) accounted for over 80 percent of visit-related expenditures in the six-state region.

Figure 88 shows that most visit-related expenditures went towards equipment and maintenance ($184 million), followed by dockage fees ($52 million), boat fuel/oil ($36 million), and restaurant meals ($35 million).

As shown in Figure 89, boaters' visit expenditures in 2012 averaged more than $1,700 per vessel, with boaters spending $818 on equipment, maintenance, repairs and upkeep; and $232 on transient/guest dockage. Figure 90 summarizes the distribution of visit expenses by state and type.

Table 20: Summary of Money Spent on Boat Visits by State

State Boat Registered	State Where Expenditures Occurred							
State	ME	NH	MA	RI	CT	NY	Other	Total
ME	$19,403,049	$143,884	$1,052,784	$3,870	$1,534	$1,534	$2,420,248	$23,026,904
NH	$233,889	$13,592,251	$696,965	$0	$6,504	$8,996	$26,348	$14,564,953
MA	$6,845,294	$420,649	$62,200,352	$317,820	$876,898	$0	$362,759	$71,023,771
RI	$0	$0	$1,608,416	$19,638,700	$816,758	$28,982	$1,054,889	$23,147,746
CT	$0	$0	$211,209	$880,349	$44,957,371	$5,018,838	$1,990,382	$53,058,148
NY	$114,442	$0	$415,721	$8,286,644	$686,864	$192,925,102	$344,287	$202,773,059
TOTAL	**$26,596,674**	**$14,156,785**	**$66,185,446**	**$29,127,383**	**$47,345,929**	**$197,983,452**	**$6,198,914**	**$387,594,582**

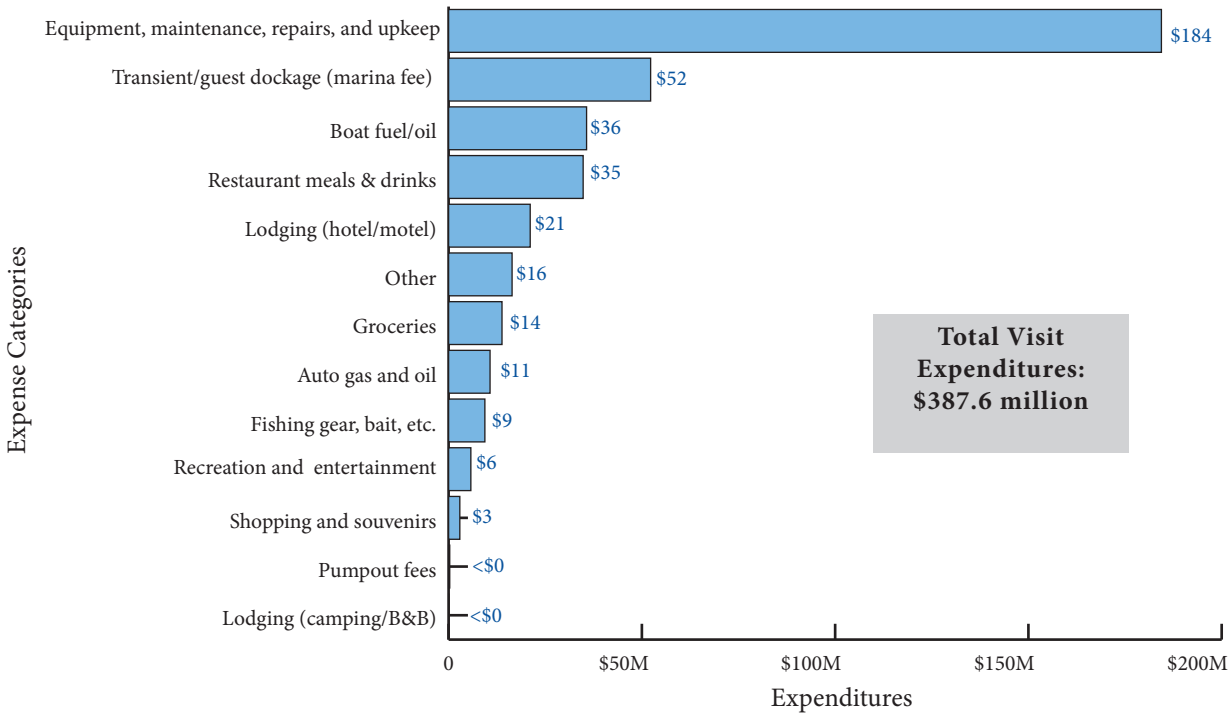


Figure 88: Visit-Related Expenditures in 2012 (Millions of Dollars)

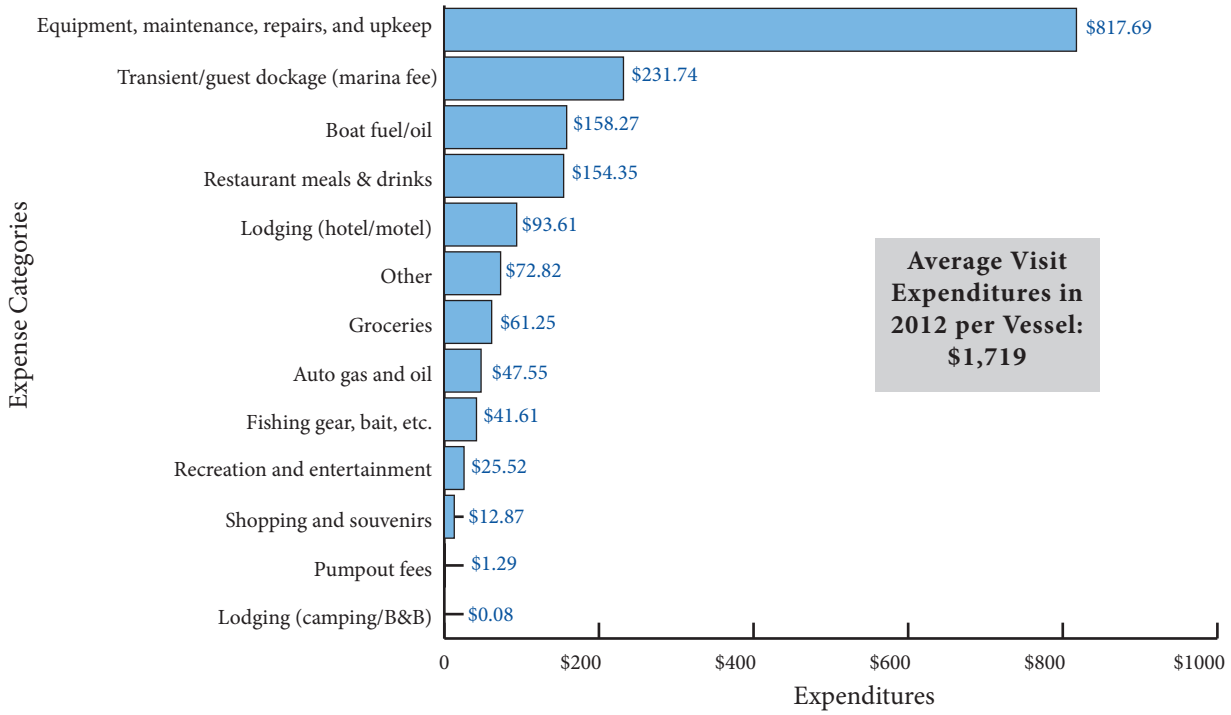


Figure 89: Average Visit-Related Expenditures in 2012 ($ Per Registered Vessel)

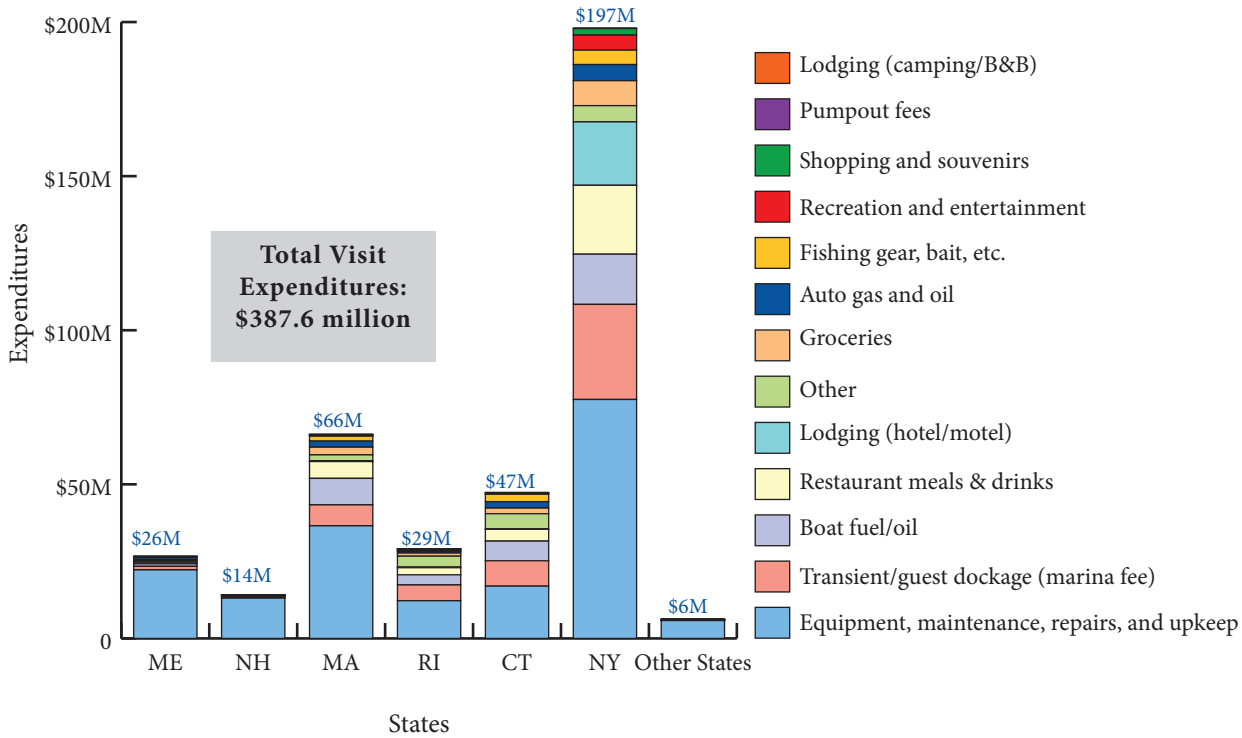


Figure 90: Distribution of Visit Expenditures in 2012 by State and Type (Millions of Dollars)

Yearly Expenditures

Boaters with vessels registered in the six-state region spent more than $1.3 billion on yearly expenditures in 2012 (Table 21). Most of these expenditures were made in New York ($532 million), Massachusetts ($351 million), and Connecticut ($254 million).

Figure 91 shows that docking, mooring, and storage ($318 million), routine maintenance ($274 million), boat loan payments ($219 million), and repairs ($159 million) accounted for most of the yearly spending.

As illustrated in Figure 92, yearly expenditures in 2012 averaged more than $5,800 per registered vessel, with boaters' spending $1,378 on docking, mooring, and storage, and $1,190 on routine maintenance.

Figure 93 illustrates the distribution of yearly expenses by state and type of purchase.

Table 21: Summary of Yearly Expenditures by State

By Boaters Registered In	State Where Expenditures Occurred							
State	ME	NH	MA	RI	CT	NY	Other	Total
ME	$73,204,592	$1,029,502	$773,885	$151,853	$351,910	$72,946	$1,462,713	$77,047,401
NH	$3,791,171	$18,603,561	$1,916,467	$57,297	$26,108	$34,057	$897,350	$25,326,011
MA	$3,415,596	$3,247,733	$341,760,071	$5,454,749	$2,343,483	$1,577,751	$9,798,140	$367,597,524
RI	$337,598	$9,304	$5,688,636	$76,584,080	$6,044,348	$62,970	$2,984,126	$91,711,063
CT	$45,350	$10,563	$997,877	$3,752,687	$238,118,213	$4,387,025	$3,017,945	$250,329,660
NY	$61,457	$0	$263,379	$1,249,256	$7,439,300	$526,034,440	$1,228,346	$536,276,179
TOTAL	**$80,855,767**	**$22,900,662**	**$351,400,314**	**$87,249,923**	**$254,323,363**	**$532,169,189**	**$19,388,620**	**$1,348,287,838**

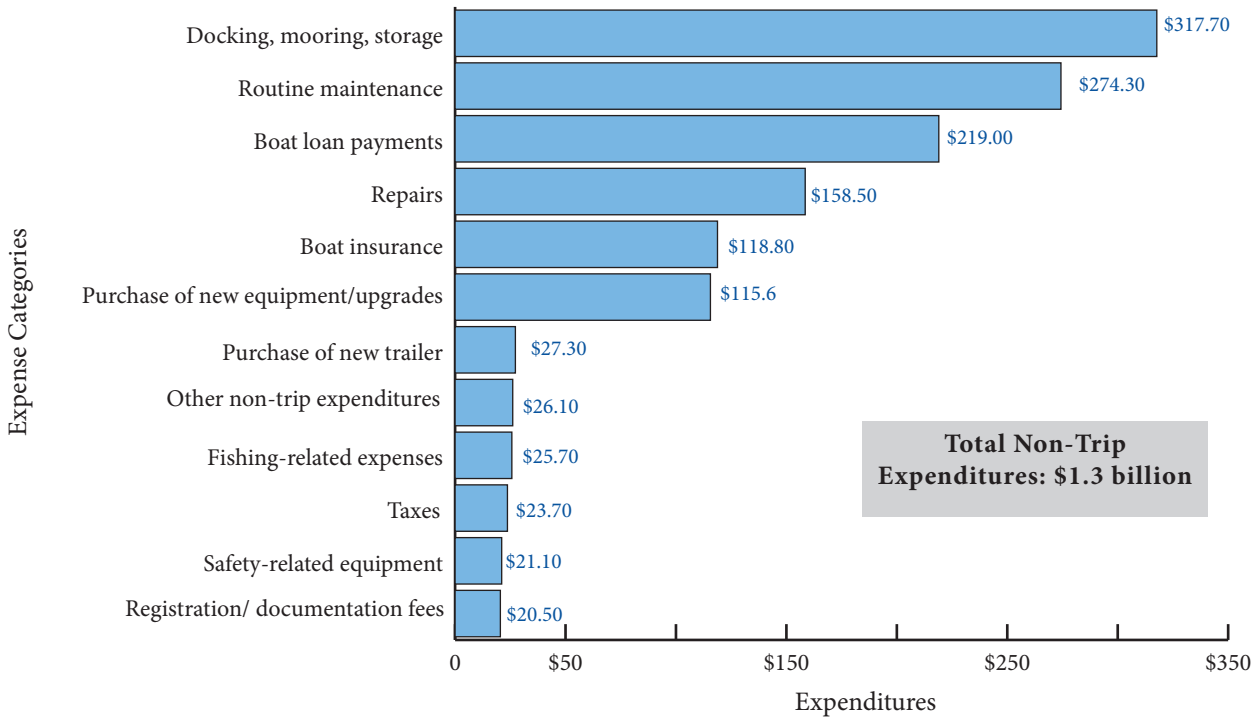


Figure 91: Amount Spent on Yearly Expenditures in 2012 (millions of dollars)

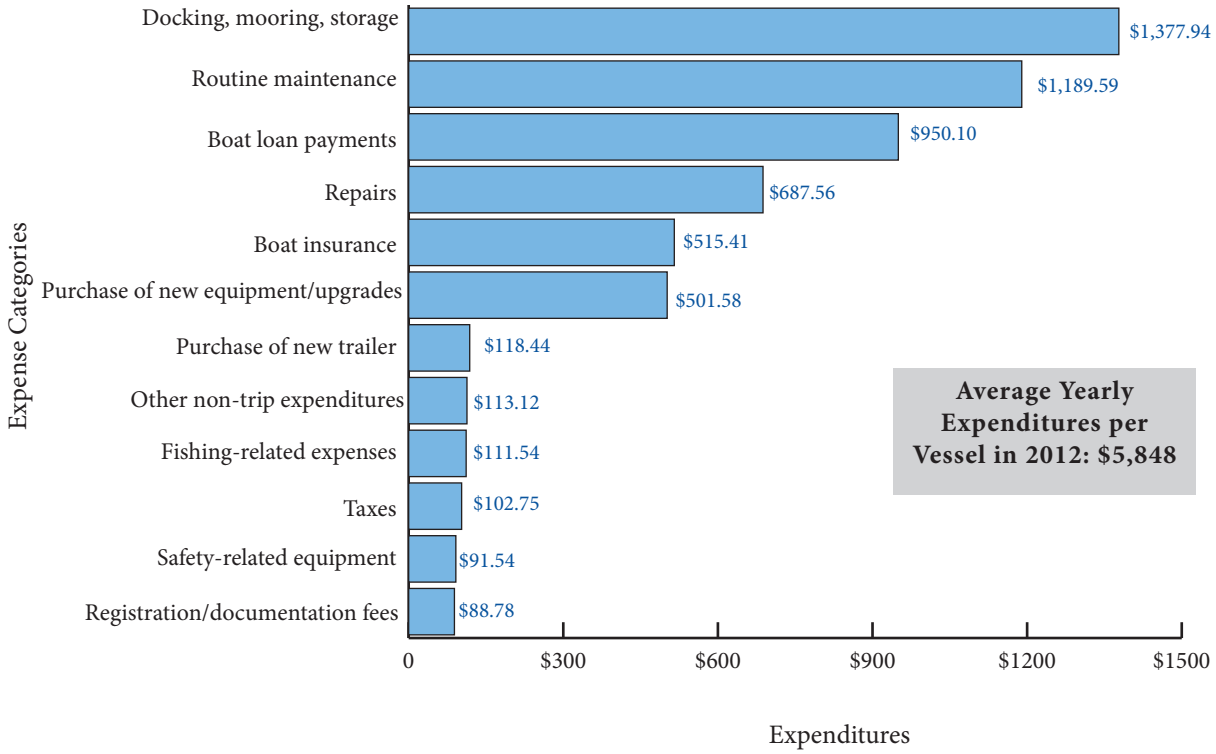


Figure 92: Average Amount Spent on Yearly Expenditures in 2012 ($ Per Registered Vessel)

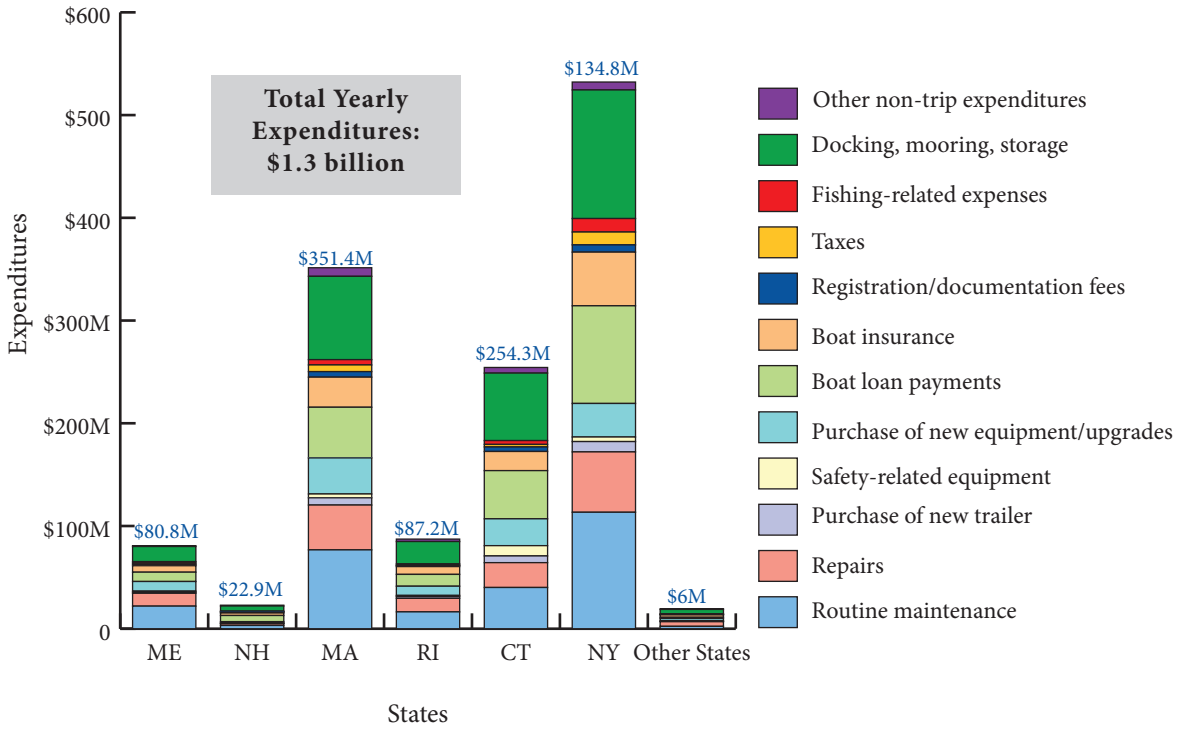


Figure 93: Yearly Expenditures in 2012 By State (Millions of Dollars)*

4.5.3 Modeled Impacts: Direct, indirect and induced

The following figures and tables summarize the regional economic impacts of boating expenditures that occur in the six-state region. Table 22 shows that boating-related expenditures of $2.0 billion generated direct, indirect, and induced economic output of almost $3.5 billion in 2012. Yearly expenditures accounted for most of this total ($2.3 billion), followed by visit-related expenditures ($0.7 billion) and trip-related expenditures ($0.5 billion) (Figure 94).

Table 22: Impact of Boating Expenditures within the Six-State Region on the Region's Economic Output: Distribution by Trip, Visit, and Yearly Expenditures

State in Which Impacts Occurred	Expenditure Category				
State	Trip	Visit	Yearly	Total	Percent
ME	$29,402,896	$44,292,918	$131,568,108	$205,263,922	6%
NH	$9,275,207	$23,368,746	$36,335,817	$68,979,770	2%
MA	$122,657,928	$115,310,955	$601,493,648	$839,462,531	24%
RI	$29,767,654	$49,049,516	$148,431,032	$227,248,202	7%
CT	$53,429,572	$79,517,341	$421,260,516	$554,207,429	16%
NY	$187,799,426	$339,730,516	$872,116,798	$1,399,646,740	40%
Additional Interstate Impacts*	$24,446,479	$36,734,277	$124,506,911	$185,687,668	5%
TOTAL	**$456,779,162**	**$688,004,269**	**$2,335,712,829**	**$3,480,496,261**	**100%**

*These additional indirect and induced impacts occurred within the six-state study region as a result of the interrelationship between economic activity in each state and economic activity elsewhere in the region. These impacts cannot be attributed to a particular state.

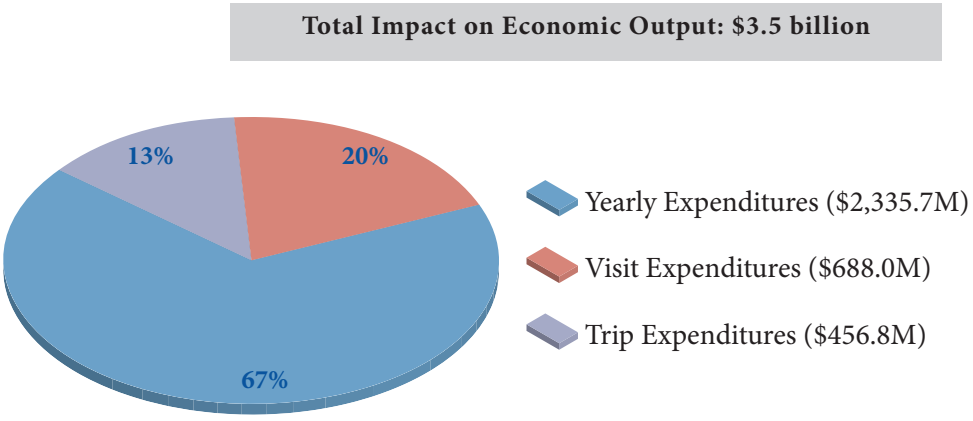


Figure 94: Estimated Contribution of Boating Expenditures to Output in the Six-State Region in 2012: Distribution of Impact by Expenditure Category (Millions of Dollars)

Figure 95 illustrates the distribution of the impact on economic output by state and expenditure category (i.e., trip, visit, and yearly expenditures).

As shown in Figure 96, the majority of the economic output was generated in states where the greatest share of boating-related expenditures occurred (i.e., New York, Massachusetts, and Connecticut). Together, these three states account for approximately 80 percent of the economic output generated by boating-related expenditures in the six-state region.

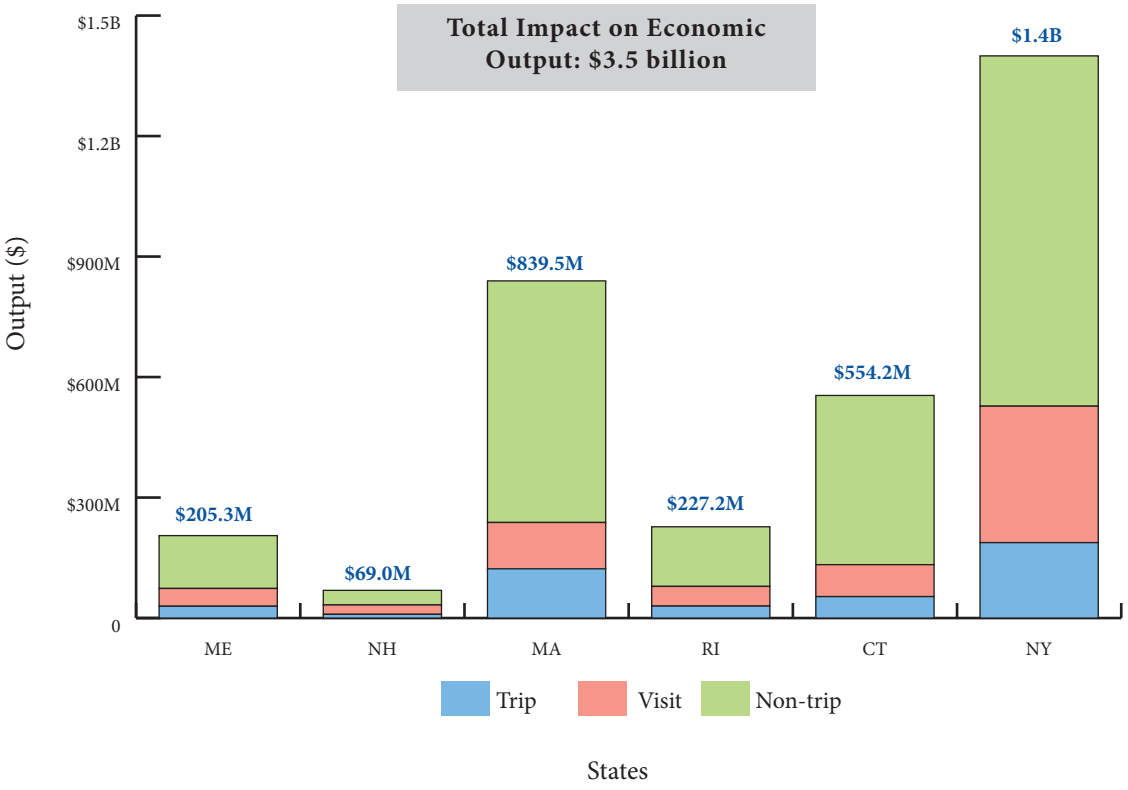


Figure 95: Estimated Contribution of Boating Expenditures to Output in 2012: Distribution of Impact by Trip, Visit and Yearly Impacts (millions of dollars)*

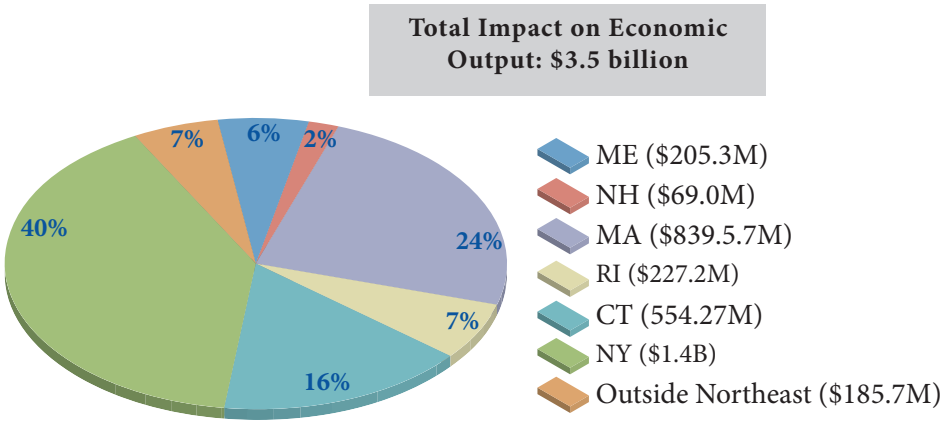


Figure 96: Estimated Contribution of Boating Expenditures to Northeast Output in 2012: Distribution by State (millions of dollars)

Figure 97 shows the total impact of other states' spending on each state's total economic impact estimates. For example, Massachusetts-registered boaters' spending accounts for 12% of Maine's economic impact estimate.

Figure 98 illustrates the impact of boating expenditures on economic output by industry. As Figure 98 indicates, impacts were greatest in the following sectors: financial activities (including finance, insurance providers, real estate and leasing operations); boat repair and other services; trade, transportation, and utilities (including retail trade); and the leisure and hospitality industry.

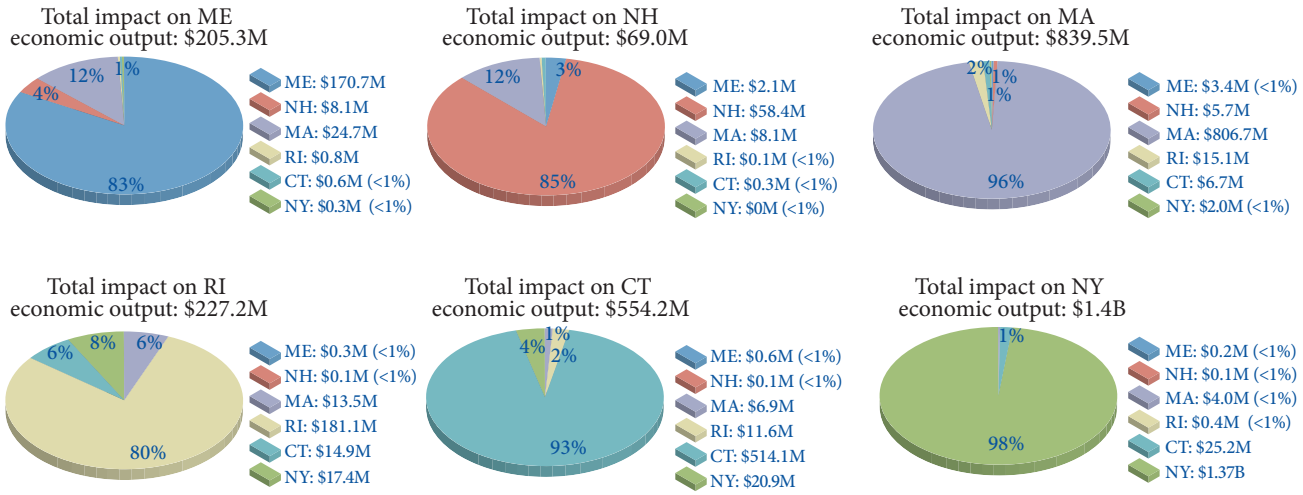


Figure 97: Each State's Total Economic Impact Estimates (including Direct, Indirect, and Induced Effects) by State of Registration

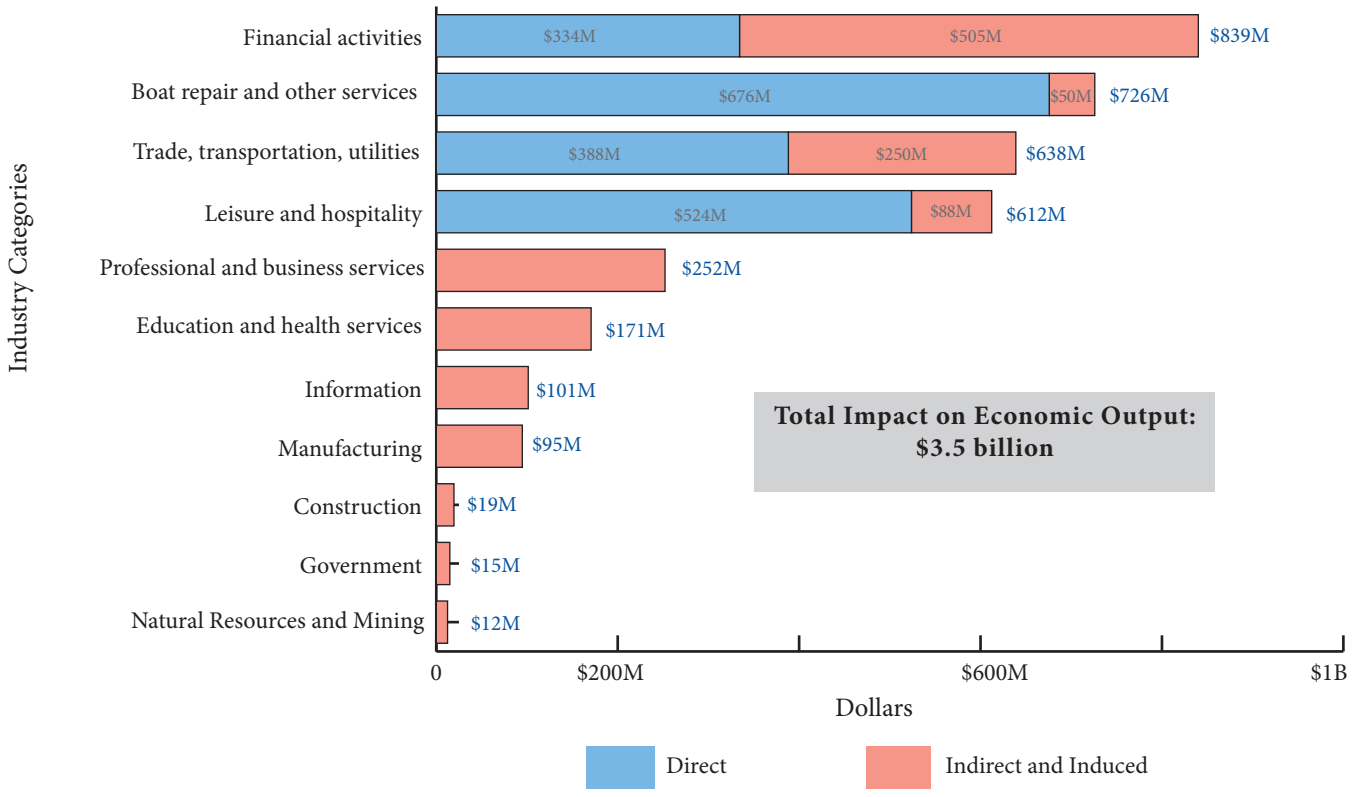


Figure 98: Impact of 2012 Boating Expenditures on Economic Output in the Six-State Region by Industry Sector

4.5.4 Year-round Jobs

Table 23 shows a portion of the impact of marine recreational boaters' expenditures on employment in the six-state region. As the table and figure indicate, marine recreational boaters' expenditures in 2012 increased labor demand by an estimated 27,000 year-round jobs.

Yearly expenditures accounted for the majority of this impact (17,000 year-round jobs), followed by visit expenditures (6,000 year-round jobs) and trip expenditures (4,000 year-round jobs) (Figure 99). Similar to the impact on economic output, the impact on employment was greatest in the states in which boating-related expenditures were highest; i.e., New York, Massachusetts, and Connecticut.

Table 23: Estimated Contribution of Marine Recreational Boaters' Expenditures to Employment Demand in 2012 (year-round jobs)

State in Which Impacts Occurred	Impact Category			
State	Trip	Visit	Yearly	Total
ME	329	383	1,143	1,854
NH	97	171	278	546
MA	1,171	943	4,384	6,498
RI	318	464	1,227	2,008
CT	495	670	3,134	4,299
NY	1,827	2,934	6,066	10,828
Additional Inter-state Impacts[a]	118	173	605	896
TOTAL	**4,354**	**5,738**	**16,837**	**26,929**

[a]These additional indirect and induced impacts occurred within the six-state study region as a result of the interrelationship between economic activity in each state and economic activity elsewhere in the region. These impacts cannot be attributed to a particular state.

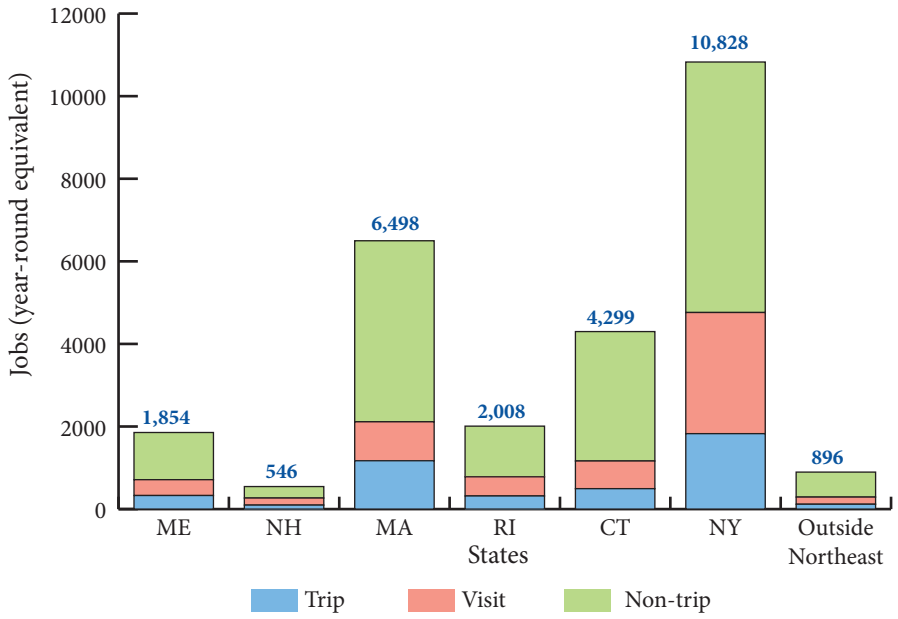


Figure 99: Impact of Marine Recreational Boaters' Expenditures on Employment Demand in 2012 (year-round jobs)

Figure 100 illustrates the impact of boating expenditures on employment by industry. As Figure 100 indicates, impacts were greatest in the following sectors: leisure and hospitality; trade, transportation, and utilities (including retail trade); boat repair and other services; and financial activities (including finance, insurance providers, real estate and leasing operations)

Tables 24 - 27 provide additional detail on the economic impact of trip, visit, and yearly expenditures, showing impacts on employment, labor income, and value added by state.

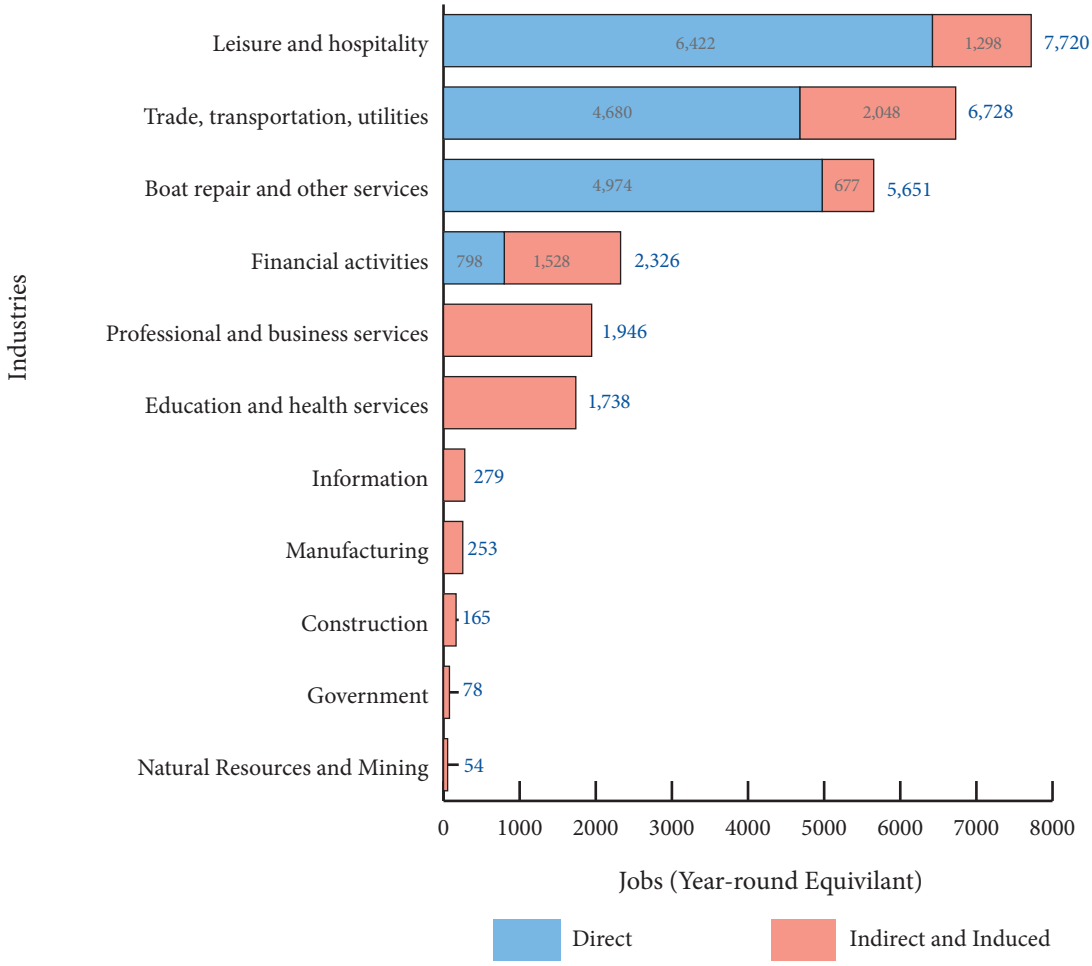


Figure 100: Impact of 2012 Boating Expenditures on Employment Demand in Six-State Region by Industry Sector

Table 24: Economic Impacts on Employment, Labor Income, and Value Added by State due to Trip-Related Boating Expenditures

State in Which Impacts Occurred	Impact Category			
State	Employment	Labor Income	Value Added	Output
ME	329	$11,848,406	$18,000,848	$29,402,896
NH	97	$3,742,211	$6,021,748	$9,275,207
MA	1,171	$52,418,629	$82,839,408	$122,657,928
RI	318	$12,573,014	$19,208,352	$29,767,654
CT	495	$23,675,280	$36,744,192	$53,429,572
NY	1,827	$79,036,107	$124,199,856	$187,799,426
Additional Inter-state Impacts[a]	118	$8,457,789	$14,496,952	$24,446,479
TOTAL	**4,354**	**$191,751,435**	**$301,511,356**	**$456,779,162**

[a]These additional indirect and induced impacts occurred within the six-state study region as a result of the interrelationship between economic activity in each state and economic activity elsewhere in the region. These impacts cannot be attributed to a particular state.

Table 25: Economic Impacts on Employment, Labor Income, and Value Added by State due to Visit-Related Boating Expenditures

State in Which Impacts Occurred	Impact Category			
State	Employment	Labor Income	Value Added	Output
ME	383	$21,335,915	$28,184,096	$44,292,918
NH	171	$12,086,658	$15,967,672	$23,368,746
MA	943	$54,523,909	$77,808,272	$115,310,955
RI	464	$22,244,799	$30,886,464	$49,049,516
CT	670	$37,919,899	$54,260,808	$79,517,341
NY	2,934	$151,217,219	$222,344,144	$339,730,516
Additional Inter-state Impacts[a]	173	$12,552,686	$21,382,551	$36,734,277
Total	**5,738**	**$311,881,084**	**$450,834,007**	**$688,004,269**

[a]These additional indirect and induced impacts occurred within the six-state study region as a result of the interrelationship between economic activity in each state and economic activity elsewhere in the region. These impacts cannot be attributed to a particular state.

Table 26: Economic Impacts employment, labor income, and value added by state due to Yearly Boating Expenditures

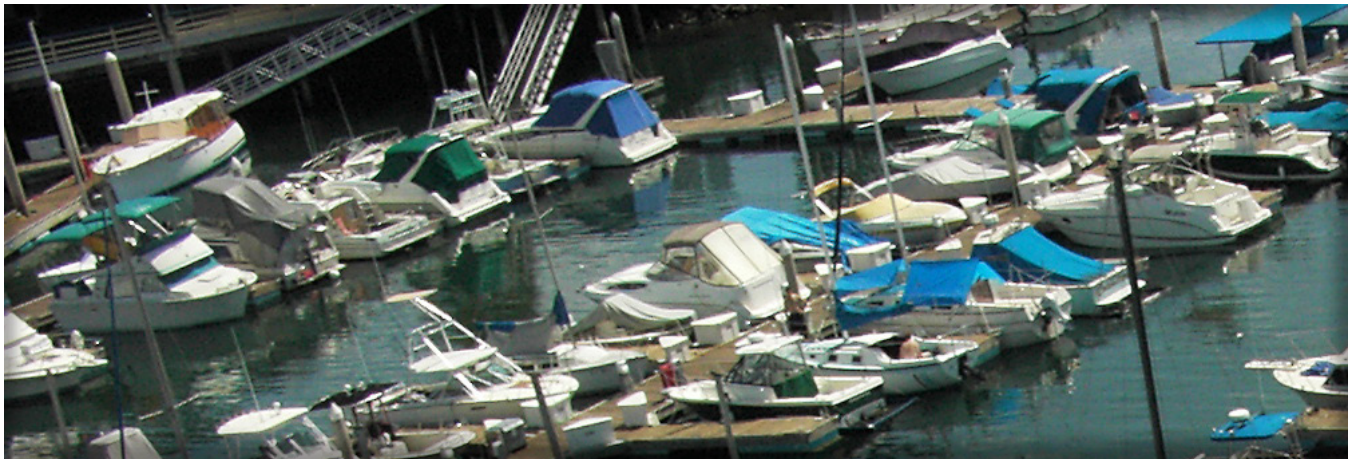
State in Which Impacts Occurred	Impact Category			
State	Employment	Labor Income	Value Added	Output
ME	1,143	$54,760,059	$80,818,496	$131,568,108
NH	278	$13,620,317	$22,602,176	$36,335,817
MA	4,384	$267,032,280	$399,743,360	$601,493,648
RI	1,227	$64,444,780	$93,478,848	$148,431,032
CT	3,134	$181,927,028	$279,548,352	$421,260,516
NY	6,066	$375,918,421	$586,021,536	$872,116,798
Additional Inter-state Impacts[a]	605	$45,256,349	$74,974,902	$124,506,911
TOTAL	**16,837**	**$1,002,959,233**	**$1,537,187,670**	**$2,335,712,829**

[a]These additional indirect and induced impacts occurred within the six-state study region as a result of the interrelationship between economic activity in each state and economic activity elsewhere in the region. These impacts cannot be attributed to a particular state.

Table 27: Economic Impacts on employment, labor income, and value added by state due to All Boating Expenditures

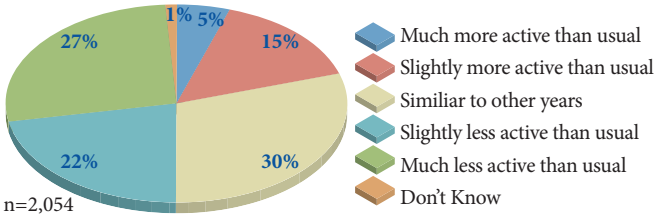
State in Which Impacts Occurred	Impact Category			
State	Employment	Labor Income	Value Added	Output
ME	1,854	$87,944,379	$127,003,440	$205,263,922
NH	546	$29,449,185	$44,591,596	$68,979,770
MA	6,498	$373,974,818	$560,391,040	$839,462,531
RI	2,008	$99,262,593	$143,573,664	$227,248,202
CT	4,299	$243,522,207	$370,553,352	$554,207,429
NY	10,828	$606,171,747	$932,565,536	$1,399,646,740
Additional Inter-state Impacts[a]	896	$66,266,825	$110,854,405	$185,687,668
TOTAL	**26,929**	**$1,506,591,752**	**$2,289,533,033**	**$3,480,496,261**

[a]These additional indirect and induced impacts occurred within the six-state study region as a result of the interrelationship between economic activity in each state and economic activity elsewhere in the region. These impacts cannot be attributed to a particular state.



4.6 Boaters' Feedback on Boating-Related Topics

The survey collected data on additional boating-related topics, including feedback from boaters on boating activity in 2012 compared to previous years, boating safety, use compatibility (whether boaters could continue enjoying boating near other structures and activities), and the 2012 NE Survey experience.



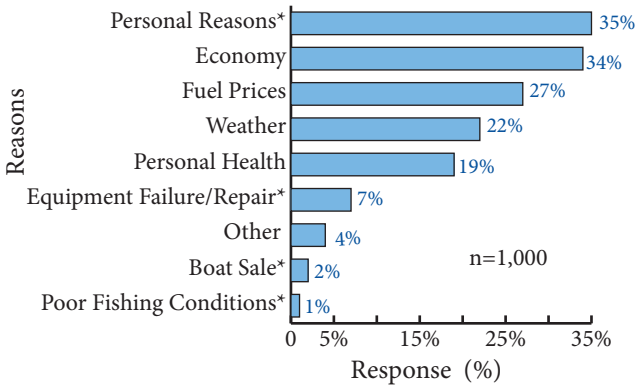
Note: Responses to the question, "How would you rate your boating activity on your boat in 2012 compared to other years?"

Figure 101: Boating Activity in 2012 Compared to Previous Years

4.6.1 2012 Boating Activity Compared to Previous Years

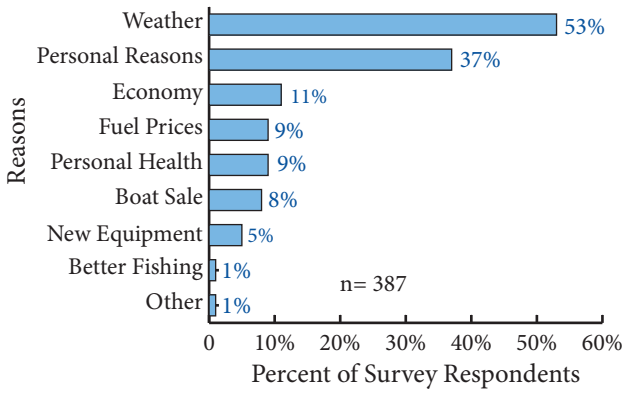
When asked about boating activity during the 2012 boating season compared to previous years, nearly half of boaters (49%) responded that they boated less in 2012 (Figure 101). The most common reason (35% of boaters) for decreased boating activity was "personal reasons"[25], and "economy" was a close second (34% of boaters) (Figure 102). About 20% of boaters responded that their boating activity was more active in 2012 than previous years (Figure 101), with most boaters (53%) citing "weather" as the most common reason why their boating activity increased (Figure 103). 30% of boaters noted that their 2012 boating activity was similar to previous years.

25 The most commonly cited personal reasons included: more demanding work schedule, busy with other hobbies, and familial obligations.



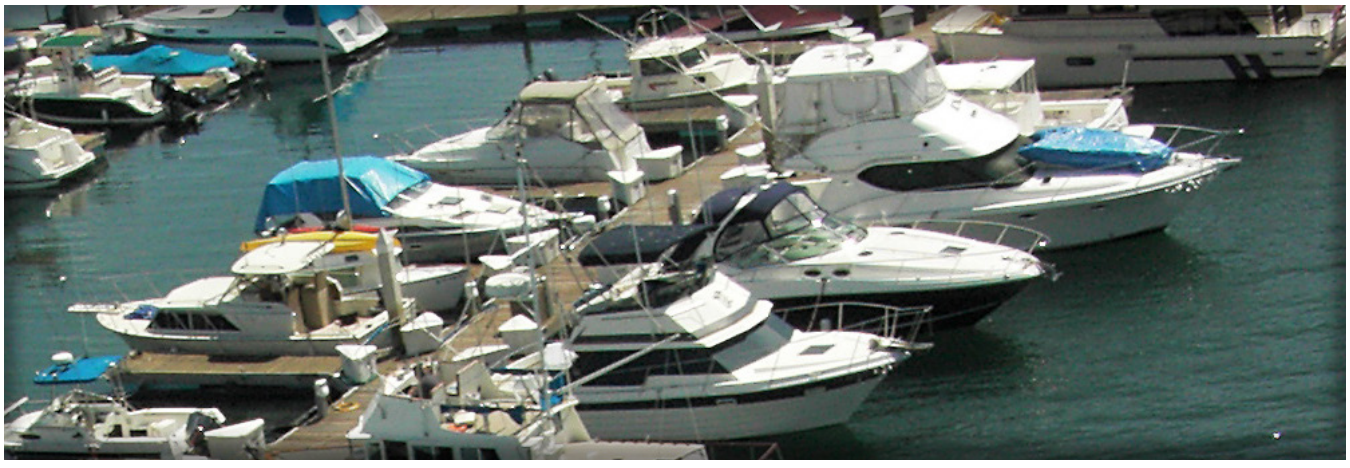
Note: Responses to the question, "Why do you think your boating activity decreased this year?" The survey team created categories with an * next to them during the data analysis phase. These responses were previously in the "other" category.

Figure 102: Reason for Decrease in Boating Activity



Note: Responses to the question, "Why do you think your boating activity increased this year?" The survey team created categories with an * next to them during the data analysis phase. These responses were previously in the "other" category.

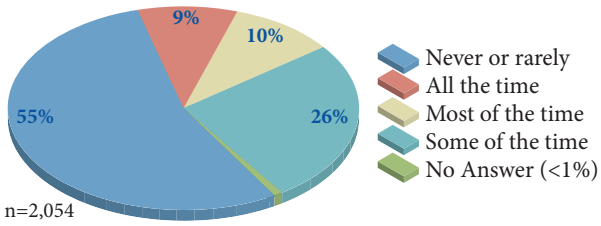
Figure 103: Reason for Increase in Boating Activity



4.6.2 Boating Safety

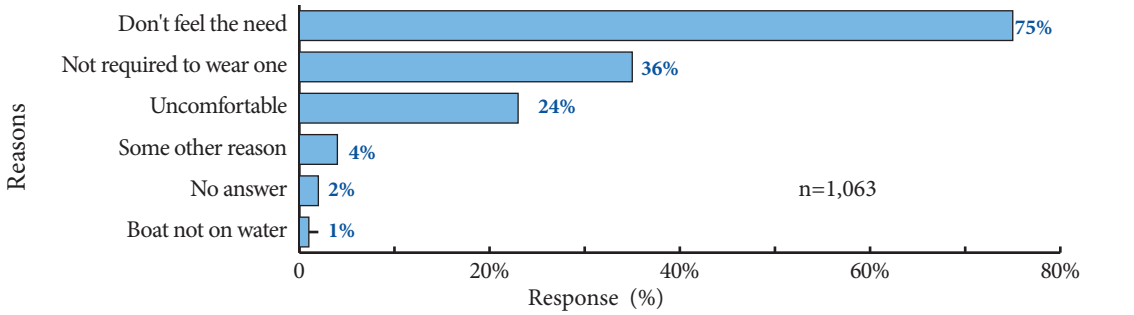
The survey gathered data on boating safety, including lifejacket use, major safety concerns on the water, and whether boaters have taken a navigation course. Most survey participants (55%) reported that they "never or rarely" wore a lifejacket on the boat during the 2012 boating season (Figure 104). When asked why they didn't wear a lifejacket more often, most boaters (75%) responded that they "don't feel the need", and 36% said they were "not required to wear one" (Figure 105).

When asked "what is your major safety concern on the water", most boaters noted their concern about other boaters' boating behavior (Figure 106), specifically focusing on "inconsiderate actions by others" (74%), "lack of knowledge of navigation rules by others" (58%), and "use of alcohol by boat operators (43%). Over half of participants (51%) also highlighted "hazards (e.g., rocks, shallow water)" as a major safety concern.



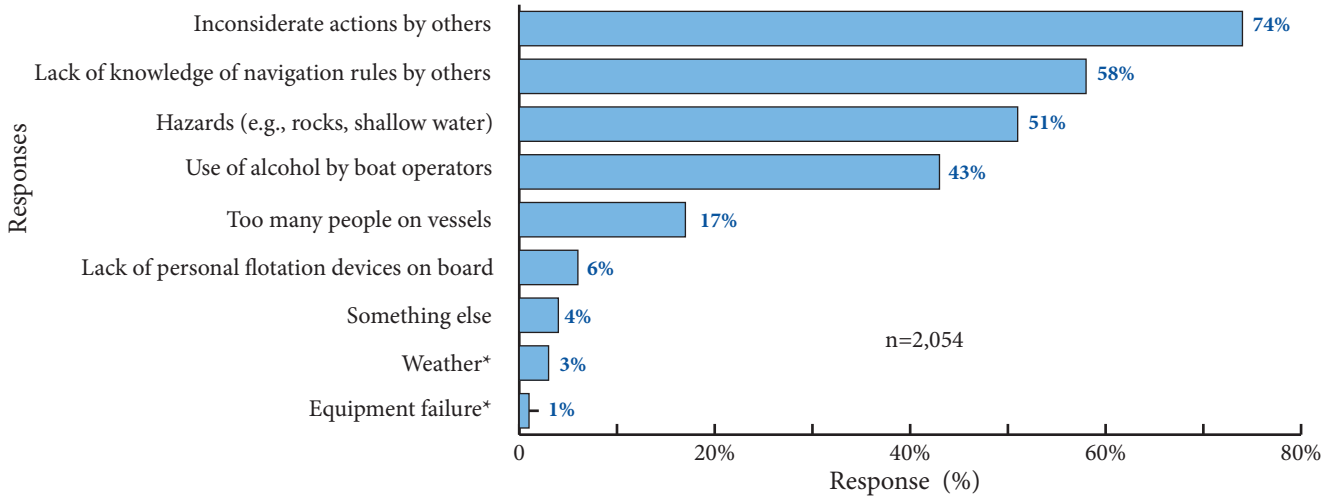
Note: Responses to the question, "How often did you wear a lifejacket on the boat during this season?"

Figure 104: Lifejacket Use during 2012 Boating Season



Responses to the question, "Why don't you wear a life jacket more often?"

Figure 105: Reason for Limited Lifejacket Use



Responses to the question, "What is your major safety concern on the water? Check all that apply."

Figure 106: Boaters' Major Safety Concerns on the Water

As shown by Table 28, when asked, "Have you ever taken a navigation class", most boaters (65%) responded that they have taken a navigation class, with approximately 76% taking their navigation class through the USCG Auxiliary or US Power Squadrons, and 24% through another organization. When asked if boaters would be interested in an online option for a boating course, 62% responded "yes", 21% responded "my state does not require a boating certificate", and 17% responded "no".

Table 28: Responses by Survey Participants to Navigation Class and Boating Course Questions

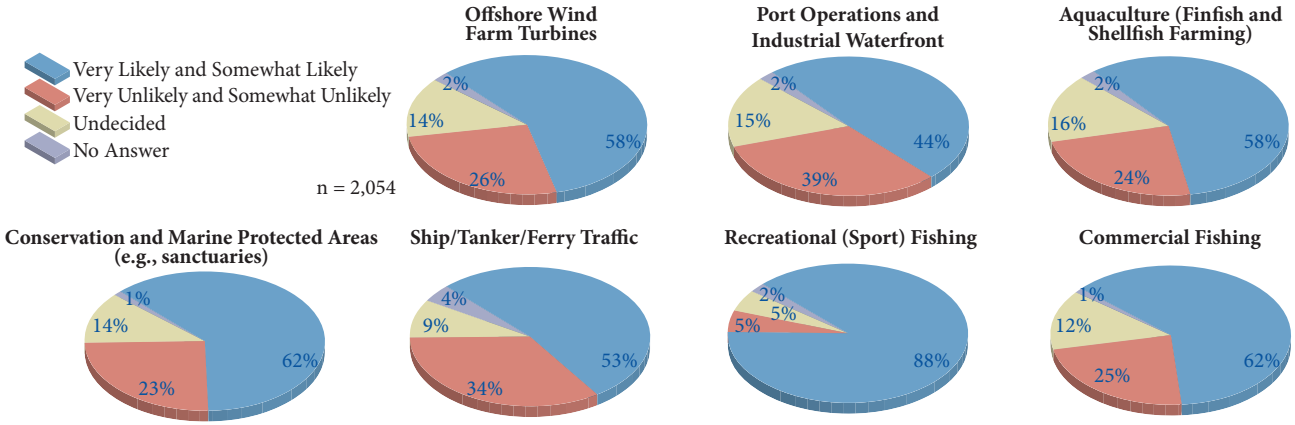
Question	Response
Have you ever taken a navigation class? (n = 2,054)	65%: Yes; 35%: No
Where did you take your navigation class? (n = 1,340)	76%: Through USCG Auxiliary or US Power Squadrons 24%: Through another organization
Would you take an online boating course? (n = 2,054)	62%: Yes 17%: No 21%: My state does not require a boating certificate 1%: N/A

4.6.3 Compatibility with Other Activities

When asked whether or not they could continue to enjoy boating near other activities and/or structures in the ocean, 62% responded that they could continue to enjoy boating near conservation and marine protected areas. Furthermore, more than half of boaters responded that recreational boating was compatible with offshore windfarms, commercial fishing, ship/tanker/ferry traffic, and aquaculture (finfish and shellfish farming). Port operations and industrial waterfront were noted as less compatible with recreational boating. See Figure 107 for a summary of all responses.

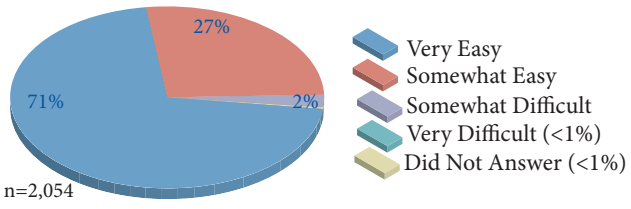
4.6.4 2012 NE Survey Experience

The survey asked boaters to provide feedback on the experience of participating in the 2012 NE Survey. Most respondents (98%) thought the 2012 NE Survey was "somewhat easy" to "very easy" (Figure 108), and 91% of respondents were "somewhat willing" to "very willing" to participate in a similar survey in the future (Figure 109).



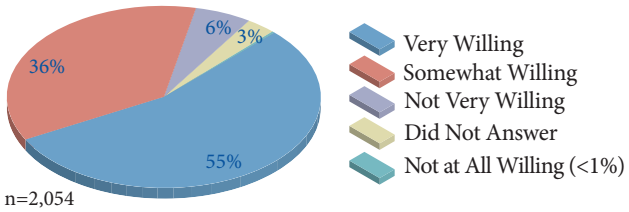
Responses to question, "Sometimes boating can occur near other activities. In your opinion, how likely is it that you can continue to enjoy boating near the following structures or activities."

Figure 107: Compatibility of Recreational Boating with Other Ocean Uses and Structures



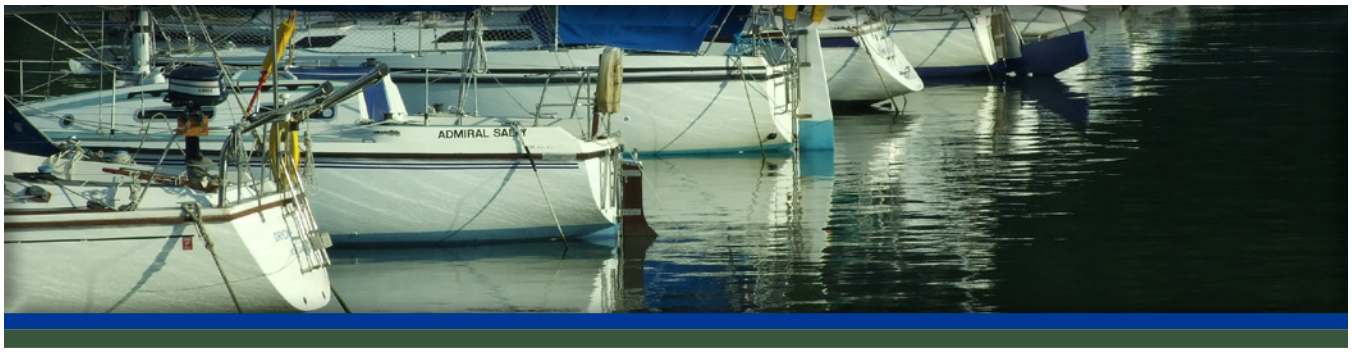
Responses to the question, "Please rate the ease of use of the Northeast Recreational Boater Survey."

Figure 108: Ease of Use of the Northeast Recreational Boater Survey



Responses to the question, "How willing would you be to participate in a similar survey?"

Figure 109: Boaters' Willingness to Participate in Similar Survey in the Future



Chapter 5: Discussion

The 2012 NE Survey helps fill a key data gap in understanding the spatial extent and economic impact of marine recreational boating in the Northeast. Below is a brief discussion of key aspects of the survey results, including response rates, spatial data, economic impact data and boaters' opinions on boating-related topics.

More specifically, in this chapter, we compare the 2012 NE Survey response rates to the 2010 MA Survey, note areas where 2012 NE Survey data confirm or differ from previous assumptions on boating activity, and discuss survey limitations. We also provide a Case Study describing how the state of Massachusetts is currently using the boating data collected through the 2010 MA Survey and 2012 NE Survey in the Massachusetts Ocean Management Plan. MA CZM is also supplementing survey data with boating data collected by MMTA through expert opinion (Section 5.3).

Furthermore, Section 5.4 provides the operational challenges associated with the 2012 NE Survey, and Section 5.5 provides next steps, including additional studies that could be conducted to supplement the 2012 NE Survey.

5.1 Discussion of Survey Results

This section discusses the survey results, including response rates, spatial data, economic impact data and boaters' opinions on boating-related topics.

5.1.1 Response Rates

Recruitment Survey

The Recruitment Survey return rate of 18.5% for the 2012 Northeast Survey was lower than the 22.5% rate obtained in the 2010 Massachusetts Survey. This is a fairly standard response rate for surveys of this type, and additional effort to obtain a higher response rate would not have resulted in appreciative changes in results[26].

The overall eligibility rate[27] for the returned surveys was 63.8% which was higher than the 57.8% rate obtained in the 2010 MA Survey, likely because we focused the 2012 sample on coastal counties and towns (rather than including inland counties as we did in the 2010 MA Survey; one of the objectives of the 2010 study was to test the assumption that boats registered in non-coastal counties were much less likely to be coastal boaters). The overall survey eligibility rate ranged from a low of 44.7% for boat owners in NH to a high of about 75.6% in NY. NH's low eligibility rate is likely because NH has a very small coastline and a number of large freshwater lakes. In this case, the survey team's attempt to restrict the geographic area to only those counties closer to the New Hampshire coastline was only partially successful. In NY, which has a much longer coastline, focusing on "coastal counties" was more effective. However, even in ME, where the database contained a field specifying salt water use, only 59.6% of respondents were eligible. Therefore, the process of targeting only eligible boaters for this type of survey continues to be challenging and somewhat unpredictable.

Monthly and End of Season Surveys

The survey completion rate was highest in May at 47.8% and lowest in October at 27.6%, likely because of natural attrition that occurs with surveys that require the completion of multiple surveys by one boater. Furthermore, as expected, most boaters took a boating trip on the water during July (79.5%), and fewest took a boating trip in October (39.8%). A number of factors might explain this, including that July typically has favorable weather for boating and a number of boaters are likely on vacation, while October weather and vacation schedules may not be as conducive to boating.

While 7,800 eligible boaters agreed to participate in the survey, 3,503 of these boaters did not complete a Monthly Survey. Through our survey feedback questions and dialogue

26 Anthony Roman, personal communication, 2013.

27 Eligibility Rate calculated as (Eligible Returned Surveys)/ (Returned Surveys). Eligible returned surveys included respondents that indicated they still owned the registered boat, the boat was used in marine waters for recreational purposes, and the boat owner had an email address and access to the internet.

with respondents during the study period, we obtained explanations as to why a number of registered boaters did not participate. Some boaters noted that they were confused when they received a link to a Monthly Survey, and contacted the support center stating that they "already completed the survey." These boaters did not realize that the Recruitment Survey signed them up for a six month survey, which could explain why a number of boaters did not respond to the Monthly Surveys. In future surveys, the recruitment mailing should more clearly state that the Recruitment Survey registers the boaters for a six-month survey. Other reasons for not participating in the Monthly Surveys could include:

1. lack of time or interest;
2. wrong email address; or
3. the Monthly Survey emails went to a spam folder.

Despite the fact that a number of eligible boaters did not complete a Monthly Survey, we received a sufficient amount of data through the Monthly and End of Season Surveys for analysis and to meet the desired objectives and goals of the study.

5.1.2 Spatial Data

Routes

The data collected over the six month season confirmed a basic assumption that most boating occurs close to shore, with over half (52.4%) of the boating routes plotted by boaters occurring within one mile of the coastline. High levels of boating activity also occurred in semi-protected bays, harbors off of major cities, and along commonly used boating routes.

While limited regional spatial data on marine recreational boating existed prior to this study, the reported boating routes appear to align with commonly known boating routes in the Northeast. In general, when traveling offshore, boaters either take routes to and from major ports/harbors (e.g., Boston Harbor, MA to Provincetown, MA), or to and from major recreational locations (e.g., Portsmouth, NH to Isle of Shoals, NH) and study results provide documentation and quantification of these patterns.

Boating activity changes through the boating season according to typically held assumptions. The number of boat trips and visits from May through October tracks closely with the concept that boaters most often visit their boats early in the season for maintenance and preparation, and take more boating trips on the water during the summer months when the weather is favorable and boaters are often on vacation. The average length of boating route also tended to be longer during the summer months (65.1 km in July compared to 39.6 km in May), as favorable weather conditions and boater's greater likelihood of taking a boating trip at that time of the season is likely more conducive to longer boat trips.

Activity Points

The survey also collected 4,635 activity points in total, highlighting hot spots for different boating-based activities, such as recreational fishing, SCUBA diving, wildlife viewing, swimming, and relaxing, as well as specifics on the type of fish targeted and species of wildlife viewed. In some cases, hot spots coincided with known fishing grounds and wildlife viewing locations, such as Jeffreys Ledge and Stellwagen Bank.

Survey results demonstrate that recreational sportfishing was the predominant activity in the region and in each state, except in Maine. Interestingly, in Maine, other activities such as wildlife viewing and relaxing outnumber fishing. The survey also confirms the status of Striped Bass as a premiere sportfishery in the Northeast. Boaters most commonly targeted Striped Bass (Morone saxatilis) while fishing in state waters, and in Federal/state waters outside of the Northeast, boaters primarily targeted Atlantic Cod (Gadus morhua) and Atlantic Bluefin Tuna (Thunnus thynnus). Confirming the prevalence of bird watching as a major recreational activity, birds were the most common type of wildlife viewed by boaters, accounting for 51% of the wildlife viewing reported by respondents. Furthermore, as expected, swimming and relaxing often occurred in conjunction with one another, since people often swim when relaxing.

5.1.3 Economic Data

Model results estimate that marine recreational boating contributed $3.5 billion to the Northeast economy in 2012. Boaters spent most of their money on either visiting their boats (e.g., equipment, maintenance, repair) or on other yearly expenditures related to their boats (e.g., storage, taxes, insurance, loans), and less money on actually taking boat trips on the water. This is somewhat surprising because, when most people think about boating, they envision actually taking trips on the water. One hypothesis could be that boaters are taking fewer boating trips on the water because of the high cost of fuel, or it could simply be due to the high costs of maintaining and storing boats. Furthermore, industry representatives confirmed that a considerable number of boat owners, especially owners of large boats, frequently do not leave the marina, and boaters spend a substantial amount of money while "hanging out" on their boats while docked.

As shown by Figure 98, the industry sectors most supported by recreational boaters' spending in the Northeast include:

1. Financial activities (including finance, insurance providers, real estate and leasing operations): $840 million
2. Boat repair and other services: $725 million
3. Trade, transportation, and utilities (including retail trade): $638 million
4. Leisure and hospitality (including marinas, restaurants): $612 million

Boat insurance and loan payments have a direct effect on economic output in the financial services sector. Once indirect and induced effects are taken into account, the overall impact on economic output in this sector totaled an estimated $840 million. The impact on the boat repair and other services sector ($725 million) was also substantial, due primarily to direct rather than indirect and induced effects. Boating expenditures also had a substantial impact ($638 million) on economic

output in the trade, transportation, and utilities sector, which include suppliers of boating equipment, and the leisure and hospitality sector ($612 million), which includes marinas, restaurants, and other facilities that benefit directly from boating-related expenditures.

A variety of factors can affect the extent to which an industry is likely to benefit from the indirect or induced effects of spending on recreational boating. Perhaps the most fundamental factor is the extent to which the industry serves as a supplier of goods or services to other industries whose economic output is affected directly or indirectly by such expenditures. Economic activity in the boat repair and other services sector and the leisure and hospitality sector is driven largely by consumer demand, rather than by demand from other industries to which these sectors act as suppliers. Thus, it is not surprising that these sectors benefit relatively little from the indirect or induced effects of spending on recreational boating.

Conversely, economic activity in the trade, transportation, and utilities sector and the financial sector is more likely to benefit indirectly from spending on recreational boating, since these industries not only provide services to boaters, but also provide services to other industries whose output is influenced by spending on boating activities. In the case of the financial sector, sensitivity to changes in economic activity in other industries, as well as regional economic activity overall, accounts in large part for its rank as the industry whose output increases the most as a result of spending on saltwater boating.

The economic impact estimates account for a wide-range of boating-related expenditures, including monthly expenditures on boat trips and visits, and yearly expenditures on maintenance and annual upkeep. The estimates do not include: 1) spending by non-Northeast boaters in the region; 2) spending on the purchase of a new or used[28] boat; and 3) boats registered in "inland"[29] counties. Also, about 49% of boaters responded that they boated less in 2012 compared to other years, which could also make the estimates conservative (20% of boaters responded their boating activity was more active, and 30% noted it was similar to other years).

It should be noted that the National Marine Manufacturer's Association (NMMA) recently conducted the "2012 Recreational Boating Economic Impact Study", which determined the total annual economic value of recreational boating to the United States, including both marine and freshwater boating. The methodology for the NMMA study is currently unavailable. Once the methodology for the NMMA study becomes available, the NMMA study methodology should be compared with the 2012 NE Survey methodology to determine the similarities and differences between the two studies, and how results from the two studies could be crosswalked to enhance our understanding of the economic value of recreational boating.

Location of Expenditures

The majority of boaters' expenditures remained within the six-state study area. As shown in Figure 96, the greatest amount of boating expenditures (40%) occurred in New York, which is to be expected given the large number of vessels registered in NY, and that Manhattan, NY and Brooklyn, NY are respectively ranked as the #1 and #2 most expensive cities in the U.S. [30] The second greatest amount (24%) occurred in Massachusetts, which also is not surprising given Massachusetts' long coastline of more than 1,500 miles, large number of registered boats, and comparatively high cost of living both in Boston and on Cape Cod.

Regarding flow of money between states, most marine recreational boaters in the Northeast spent money in the state where their boat was registered. Since the majority of boaters' spending was on yearly expenditures (e.g., storage, docking, taxes, insurance), it is not surprising that boaters spent money on yearly expenditures in the state the boat is registered (rather than on a trip to a different state). As shown by Figure 84, NY registered boaters spent the most money in NY (97% in NY, 3% in other states), and NH registered boaters spent the least amount in NH (79% in NH, 21% in other states). Since NH has a fairly small coastline of 18 miles, it is also not surprising that NH boaters travel to other states more frequently and spend money. On the other hand, given the amount of interstate boating activity, it is somewhat surprising that NY registered boaters do not spend more money in other states. Possible explanations are that NY has ample facilities and recreational opportunities to keep NY-registered boaters in-state, or NY boaters could be boating in other regions such as the Mid-Atlantic.

Year-round jobs

The $3.5 billion in boater spending increased the labor demand in the Northeast by an estimated 26,929 year-round jobs, with one year-round job equaling one full-time job lasting twelve months (similarly, two jobs lasting six months each = one year-round job; three jobs lasting four months each = one year-round job). Given the definition of year-round job, it is possible the actual number of jobs in the Northeast could be considerably higher when considering part-time and seasonal jobs.

Most jobs supported by marine recreational boating fall under the following categories, ranked highest to lowest: 1) leisure and hospitality; 2) trade, transportation and utilities; and 3) boat repair and other services. The category "leisure and hospitality" includes jobs at marinas and restaurants, which explains why it is the top ranked category.

Note that the ranking of these industries by jobs differs from the ranking of the sectors most supported by boaters' spending, reflecting underlying differences in the ratio of output to employment in each industry.[31]

28 One study estimates that the average price of a new traditional powerboat in 2011 was $35,800, used boat was $10,612, and 527,000 new boats were sold in 2011 (http://nmma.net/assets/cabinets/Cabinet445/2011_abstract_preview.pdf)

29 Inland counties include all Northeast state counties and towns not directly bordering saltwater or not identified by state coastal planners as likely containing a considerable amount of marine boating activity. See Chapter 3 "Methodology" for more details.

30 "COLI Release Highlights, Quarter 1 2013." Cost of Living Index. The Council for Community and Economic Research, 2013. 8 November 2013, <http://www.coli.org/ReleaseHighlights.asp>

31 An increase in output in a labor-intensive industry, such as the leisure and hospitality sector, will have a greater impact on employment than the same increase in output in an industry that is less labor-intensive, such as the financial services sector. The results presented here reflect that relationship.

5.1.4 Feedback on Boating-Related Topics

An important component of the 2012 NE Survey was to "take the pulse" of boaters on important related topics, including boating safety and ocean use compatibility. Like the spatial and economic data, this boater opinion information is also useful to entities responsible for marine safety, such as the U.S. Coast Guard and local Harbormasters, to state and federal agencies with ocean resource management duties, to the industry and to boaters themselves. This section discusses boaters' opinions on topics such as boating safety, ocean use compatibility, and their overall experience participating in the 2012 NE Survey.

Boating Safety

The survey assessed boating safety through questions regarding life jacket use, major safety concerns, and whether boaters have taken a navigation course. While most boaters noted they do not wear life jackets on a regular basis, the U.S. Coast Guard "estimates that life jackets could save the lives of over 80% of boating fatality victims."[32] Because of this, the USCG recommends wearing a life jacket at all times while boating. Furthermore, most survey participants highlighted other boaters' boating behavior as one of their largest safety concerns on the water. Boating safety courses may help minimize operating errors, which 35% of the survey participants have not yet taken. For a list of boating safety courses, see the USCG website.

Ocean Use Compatibility

Understanding the compatibility between ocean uses is important to minimizing conflicts and ensuring the ocean can be enjoyed by multiple stakeholders and multiple users for years to come. Responses to this question provide planners with useful insight into boaters' opinions on the compatibility of recreational boating with other new or existing ocean uses.

Over half of boaters responded that they could continue to enjoy recreational boating near commercial fishing, aquaculture (finfish and shellfish farming), conservation and marine protected areas, ship/tanker/ferry traffic, and offshore wind farm turbines. Since these uses have been cited as potential conflicts with recreational boating, this is interesting and valuable information for coastal planners, developers, and resource managers. Boaters ranked port operations and industrial waterfront as the least compatible with recreational boating, which also may be useful to coastal planning agencies and industries when planning for and maintaining working waterfronts in the Northeast.

Feedback on Survey

The positive feedback we received on boaters' experience with the 2012 NE Survey confirms that it is an effective way to measure boating activity, and is similar to the feedback we received with the 2010 MA Survey where most boaters were willing to participate in a future survey. The percent of boat owners that successfully completed the survey was also high (>80%), which likely indicates that most boaters did not have trouble with the survey. Note that we asked these questions on the End of Season survey in October, and the boaters still participating at this point were likely enthusiastic about the survey and thought the survey was easy to complete. Boaters that dropped out of the survey or stopped responding may have had a different opinion.

Furthermore, during the five industry workshops noted previously, we received primarily positive feedback on the survey methodology and survey results, confirming that this method effectively gathered stakeholder-informed data on marine recreational boating activity in the Northeast.

5.2 Study and Data Limitations

SeaPlan and partners designed the study to gather spatial and economic data on marine recreational boating and boating-based recreational activities (e.g., recreational fishing, SCUBA diving, cruising, or nature viewing) from Northeast boaters (ME to NY). While the 2012 Northeast Recreational Boater Survey collected a wide-range of data on marine recreational boating activity, it is important to understand the study limitations when interpreting the data.

We determined the study limitations through ongoing review and input from our advisory working groups and through industry engagement. The study limitations are located in bullets below, and are organized by the following topics: study scope and analysis; maps; and economic impact estimates.

5.2.1 Limitations of the Study Scope and Analysis

- **2012 NE Survey focused on marine recreational boating, not freshwater boating or charter vessels:** The 2012 NE Survey excluded charter or party boats and other commercial enterprises and freshwater boaters, which are often included in characterizing recreational boating activity. The exclusion of this activity should be noted in comparing the results of this analysis to others that may include such activity. Given the importance of these other sectors to the boating community, separate studies to capture these sectors could be conducted as funds and time permit.

- **2012 NE Survey sampled "coastal" counties, not inland counties:** Based on a recommendation from the 2010 Massachusetts Recreational Boater Survey, the survey team decided to primarily sample "coastal" counties and towns to specifically target marine boaters. Since only 3% of eligible survey participants from the 2010 MA Survey were located in inland counties, we decided that focusing on coastal counties was the best way to target marine boaters and ensure our recruiting efforts would efficiently yield the largest number of eligible responses for an effective analysis. Because

32 *Boating Safety Resource Center*. United States Coast Guard, 20 March 2013 <http://www.uscgboating.org/safety/default.aspx>

of this, the 2012 NE Survey analysis may be lacking some input from boaters that trailer their vessels from inland counties, which could affect some states more than others depending on county delineations in each state.

To avoid excluding counties with a large number of marine boaters, we decided to not only include counties that physically border marine waters, but we also included counties and towns not bordering marine waters that were highlighted by state coastal planners as likely containing a considerable number of marine recreational boaters (see Section 3.2 "Developing Survey Population and Administering Surveys" for more detail), which enabled the study to capture the bulk of marine recreational boating activity in the Northeast.

- **2012 NE Survey sampled boats registered or documented in the Northeast, not boats registered outside of the Northeast:** The methodology for this study focused on a survey of 1) boat owners of boats registered in a state in the Northeast (NY to ME) and 2) owners of U.S. Coast Guard documented vessels with a hailing port in the Northeast (NY to ME). Given the scope of this project, the study was not able to capture other boaters from outside of the Northeast, including large boats that may visit the Northeast for extended periods of time and spend a considerable amount of money. The data derived from the 2013 Mid-Atlantic Recreational Boater Survey (currently in progress) could help fill this gap, or additional studies could be conducted to gather data from boaters outside of the Northeast.

- **Boaters were asked to report on the "last" trip taken during the previous month:** The study team decided that asking boaters to report on their last trip or visit made during the previous month was the best way to collect boating activity data for a number of reasons, including: 1) asking about every trip/visit made during the month would have been burdensome to boaters; 2) asking about a randomly chosen trip/visit made during the month would likely confuse survey respondents; 3) asking about "any" trip or visit would have been bias as people will generally report on their most memorable/exciting/longest trip or their longest visit; and 4) asking about the last trip/visit made was easiest for boaters to remember since it was most recent. Furthermore, asking about a "last trip/visit of the month" is an accepted methodology in survey practice to randomize responses and reduce bias.

- **The 2012 NE Survey occurred online, and boaters needed an email address and internet access to participate:** Since the survey occurred online, industry representatives noted that the survey may not have captured those boaters who are not comfortable with computers, or did not have access to the internet over the summer. The survey team and advisory committee considered this point while designing the survey, and decided the impact would be fairly small. As noted above, reviewing the 2012 NE Survey data with industry representatives and supplementing the findings with expert opinion provided additional means of providing input for those not comfortable with computers. Furthermore, only 4.5% of boaters that responded to the recruitment survey noted that they did not own a computer or have access to the internet.

5.2.2 Limitations of the Maps

- **Spatial data accuracy depends on the boaters' positional accuracy when plotting routes and activity points:** The accuracy to which boaters plotted their routes will depend on the degree to which the boaters zoomed in; boaters' competency with geographic and spatial mapping; and the length/complexity of the route taken. Boaters often mapped routes that spanned large areas and may not have taken the time to plot their exact route accurately. Because of this, we used buffers during the route density spatial analysis to try to account for any error.

- **Scale limitations of the spatial data:** This study was conducted on a large scale and is useful at showing boating trends and important boating areas in the Northeast. However, those interested in interpreting the data in smaller sub-regions should consider whether the scale and sample size within that subregion can support conclusions about boating activity. Smaller-scaled surveys or expert opinion could help fill any noted data gaps.

- **Interpretation of activity points:** As noted previously, since the primary focus of this survey was to collect data on boating activity, the activity point data should be interpreted as an initial representation of hot spots for certain activities. The number of activity points in certain locations is likely impacted by the sample size of each state.[33] For example, the large number of activity points in Maine may be a result of Maine having the largest sample size. Therefore, the number of activity points should not be compared from one state to another; rather users should interpret the activity points as highlighting potential areas for certain recreational activities. Future studies could be conducted to obtain a more comprehensive look at the intensity of use in various locations.

- **Interpretation of boating routes:** In general, most industry representatives noted that the straight lines presented in the maps seem fairly accurate, as most powerboat owners take direct routes from a starting point to a destination. On the other hand, one industry representative offered the opinion that, while the survey instructions stated that survey participants should plot their entire boating route, some survey participants may have only plotted a straight route to and from a destination; thereby the data may not show areas where boaters drift or tack while sailing. The buffers applied around routes by the survey team account for differences in degree of accuracy among the route plotters.

  Also note that the survey data are representative of boating activity in the entire Northeast. Areas that show low levels of boating activity are considered "lower" compared to boating activity throughout the region. Furthermore, areas with no boating activity do not indicate that there is no boating activity in that area; it is relative to boating activity in the entire region.

33 Since all plotted activity points were included in the analysis (including both the random sample and supplemental sample), the sample size of each state will likely skew comparisons between states.

- **Potential Gaps in Spatial Data Identified by Industry Representatives:** At the "Coastal Boating in the Northeast"workshops convened in 20131, while industry representatives generally agreed that the maps accurately represent boating and related activities in the Northeast, some provided the insights and input on areas known to be important to boaters, as displayed in Table 29. This input reflects the opinions of industry representatives, and should be considered when viewing the maps.

5.2.3 Limitations of the Economic Data

- **The economic analysis does not include money spent on purchasing a new or used boat:** The 2012 NE Survey was distributed to people who owned a boat that was registered or documented in a coastal county within the study area in 2011. As such, the survey captures expenditures made by those who had vessels registered in 2011, but does not capture expenditures by boat owners who may have first registered a vessel in 2012, including expenditures on the purchase of such vessels. Furthermore, the indirect and induced economic activity generated by boat sales (including related spending on and jobs related to boat building) is not included. The exclusion of these expenditures will likely lead the analysis to understate the economic impact of expenditures on saltwater boating. The magnitude of the underestimation, however, is unknown.[34]

- **Interpretation of "year-round jobs":** Model results estimate that recreational boaters' spending increased labor demand in the Northeast by an estimated 26,929 year-round jobs, with one year-round job equaling one full-time job lasting twelve months. Given the definition of year-round job, it is possible the actual number of jobs in the Northeast could be considerably higher when considering part-time and seasonal jobs.

- **Visit Expenditures:** By design, the Monthly Survey inquired about spending on visits only when respondents indicated that they had not taken a trip during the month in question, which might bias the amount of money spent on boat visits.

34 As a potential point of reference, the survey and analysis include payments by current boat owners on boat loans; these payments are estimated at $219 million in 2012. The survey also includes expenditures on new equipment or upgrades to a vessel, including parts and labor (e.g., engine, electronics, tops, seats, parts, sails, supplies, gear, and accessories). These expenditures are estimated at $115.6 million in 2012.

Table 29: Potential Gaps in Spatial Data Identified by Industry Representatives

State	Potential Gaps Identified by Industry Representatives
ME	Industry representatives stated that the amount of boating activity from Rockland to Mt. Desert Island, Maine is higher than expected, and representatives were surprised that the data reveal no boaters traveling from New York to Maine. Industry representatives noted that these data do not include races, regattas, and boat builders' rendezvous which result in large amounts of boating and economic activity in Maine. The 2012 NE Survey did not intend to capture this type of activity. Other entities have collected these types of data for other projects*, and additional efforts are underway to fill gaps in data on races, regattas, and other boating events.
NH	No gaps identified
MA	Industry representatives noted that these data do not include races, regattas, and boat builders' rendezvous which result in large amounts of boating and economic activity in Maine. The 2012 NE Survey did not intend to capture this type of activity. Other entities have collected these types of data for other projects , and additional efforts are underway to fill gaps in data on races, regattas, and other boating events.
RI	These data do not capture some offshore wreck diving sites which were highlighted in the RI Special Area Management Plan (SAMP). This under-documentation might be a result of SCUBA divers using commercially chartered boats for this activity, which would not have been captured through this survey focused on recreational boats. Industry representatives noted that these data do not represent Newport, RI boating activity accurately, since races are not represented The 2012 NE Survey did not intend to capture this type of activity. Other entities have collected these types of data for other projects**, and additional efforts are underway to fill gaps in data on races, regattas, and other boating events.
CT	No gaps identified
NY	Industry representatives were surprised that the data reveal no boaters traveling from New York to Maine

*The RI Ocean SAMP contains maps of distance sailing race courses, sailboat racing areas, and temporal sailing events. Also, for BOEM's "Identification of OCS Renewable Energy Space-Use Conflicts and Analysis of Potential Mitigation Measures" study, the Urban Harbors Institute of University of Massachusetts Boston collected spatial data on ocean races in the US Atlantic OCS. For more information on the BOEM study, see http://www.data.boem.gov/PI/PDFImages/ESPIS/5/5,203.pdf. Note that additional spatial data on races and other recreational boating events in the Northeast may be available through other sources.

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- **Distribution of Out-of-State Expenditures:** Boaters were asked to indicate the percentage of their boating expenditures that were made out-of-state and the states in which such expenditures occurred; however, they were not asked for a detailed breakdown of out-of-state spending by state. This creates some ambiguity in the allocation of out-of-state expenditures to particular states. For purposes of analysis, we assume that out-of-state expenditures were evenly distributed among the states noted in each survey response.

- **The economic impact estimates are static for the year of 2012, and may be different in future years:** The IMPLAN economic model measures only those effects resulting from a specific expenditure change at one point in time. Thus, IMPLAN does not account for subsequent adjustments that may occur, such as the re-employment of workers employed or displaced by the original change in expenditures. In particular, the increased employment demand from expenditures in 2012 would not necessarily imply the same demand would occur in 2013.

- **The IMPLAN model relies upon the input/output relationships derived from the 2011 data, the most recent data available at the time of this analysis:** The results do not reflect changes in the regional economy that may have occurred since 2011. The magnitude or nature of any such changes is unknown.

5.3 Case Study: Use of Recreational Boating Data to Support Massachusetts Ocean Planning Efforts

The Massachusetts Ocean Management Plan released in 2009 contains protections for areas of concentrated recreational boating activity and included a map based on data collected through a rapid survey by MMTA. Recognizing the importance of recreational activities in Massachusetts and the limitations of the 2009 map, the MA Ocean Plan identified the need for better spatial information and economic data on recreational uses as one of the key priorities to be addressed.

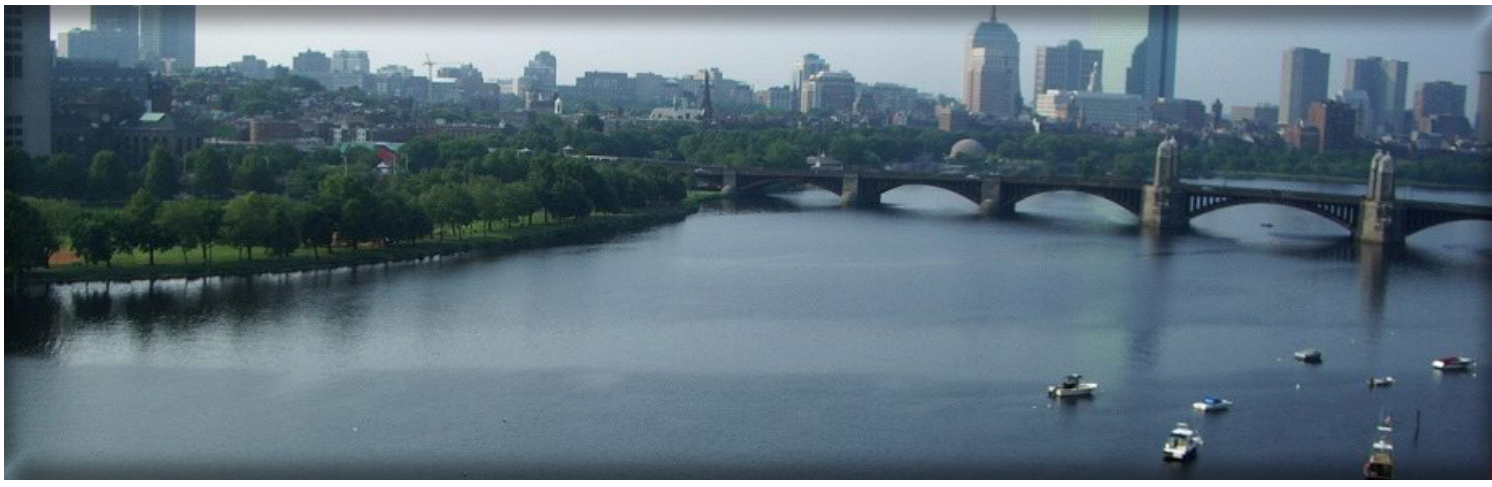
The 2010 survey of recreational boating in Massachusetts pioneered a statistically robust random survey of boaters and generated substantial data on recreational boating patterns in Massachusetts. The 2012 survey for the Northeast followed the same methodology as the 2010 survey, and added significant information on recreational boating patterns in Massachusetts and beyond. Through input from the workshops conducted by MA Office of Coastal Zone Management (CZM), SeaPlan, and the Northeast Regional Ocean Council, members of the recreational boating industry identified a few concerns, including gaps in interstate boating traffic and some customary transit routes.

To ground-truth the 2010 and 2012 maps and augment the data from the statistical surveys, CZM worked with MMTA to obtain additional user-driven, expert input. In summer 2013, MMTA sought the involvement of recreational boating industry representatives, who provided information on recreational boating routes and heavily utilized areas on NOAA charts. The data from all three sources are shown in Figure 110, and collectively constitute a robust dataset, marking a significant improvement in the available spatial information.

As part of the update to the 2009 MA Ocean Plan, the Commonwealth is working with a technical working group and the Ocean Advisory Commission and Science Advisory Council to develop recommendations for representing areas of concentrated recreational boating.

5.4 Operational Challenges and Recommendations

Throughout the course of the 2012 NE Survey, the survey team adapted and modified our methodological tactics to overcome a range of operational challenges that we encountered. Our study partners also played an instrumental role in helping to overcome challenges. Table 30 displays the challenges, how the team addressed or overcame the challenges, and respective recommendations for avoiding these challenges in future studies.



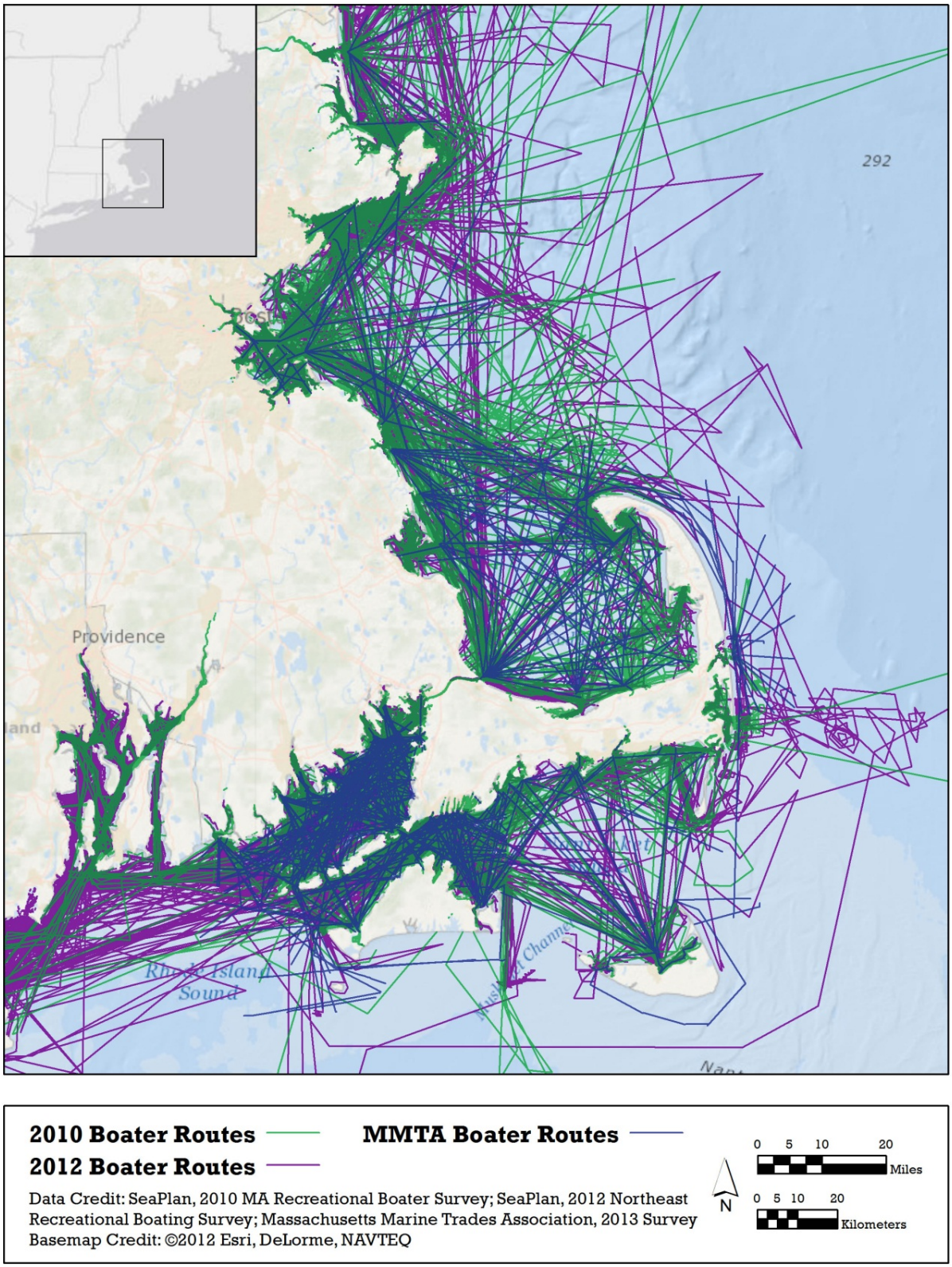


Figure 110: Routes Collected through 2010 MA Survey and 2012 NE Survey, and Routes Collected by MMTA through Expert Input

5.5 Next Steps

This study collected a wide-range of useful data on marine recreational boating activity and boating-based uses (e.g., fishing and SCUBA diving). Interested parties could analyze the data in various ways to answer a multitude of questions about boats, boat owners, boating activity, spatial use of the waters of Northeast, the spending associated with recreational boating, and numerous combinations of these topics. Based on a number of working sessions with industry and state coastal planners, our analysis focused on developing results that were 1) related to the four goals of the study (see Section 2.1 "Study Goals") and 2) of most interest to the study partners.

The survey data are available to the public to allow for future analyses.[35] To enable users to explore the data in various ways, each survey response is recorded in a data file and contains a Unique ID number which identifies the boat sampled. These data files can be analyzed by themselves or merged for different analyses. For example, the July monthly data files can be analyzed alone to study boater activity in July or the July and August data files can be analyzed together to study boater activity from those two months. Any number of the six monthly files can be analyzed in this manner to look at trips across the entire boating season.[36]

While the 2012 NE Survey collected a wide-range of data on marine recreational boating activity, the design of the study focused on marine recreational boating activity. Industry representatives suggested that additional studies could be conducted to more fully understand the breadth and details of specific marine recreational boating activities in the Northeast.

In summary, industry representatives and partners noted that the following additional studies, data, or information would be useful:

- The spatial extent and economic impact of marine recreational boating from boats registered outside of the Northeast;
- The spatial extent and economic impact of recreational fishing, sailing, regattas and races, and paddlesport activities (e.g., kayaking, canoeing, paddleboarding);
- The spatial extent and economic impact of charter ("for hire") vessels; and
- Additional expert-verified boating data to fill gaps noted by industry representatives in 2012 NE Survey spatial data. As noted previously, MMTA collected additional information on major transit routes in MA waters through expert opinion to fill gaps noted by industry representatives (see Section 5.3 "Case Study: Use of Recreational Boating Data to Support Massachusetts Ocean Planning Efforts"). Other states could conduct additional studies to fill gaps if needed.

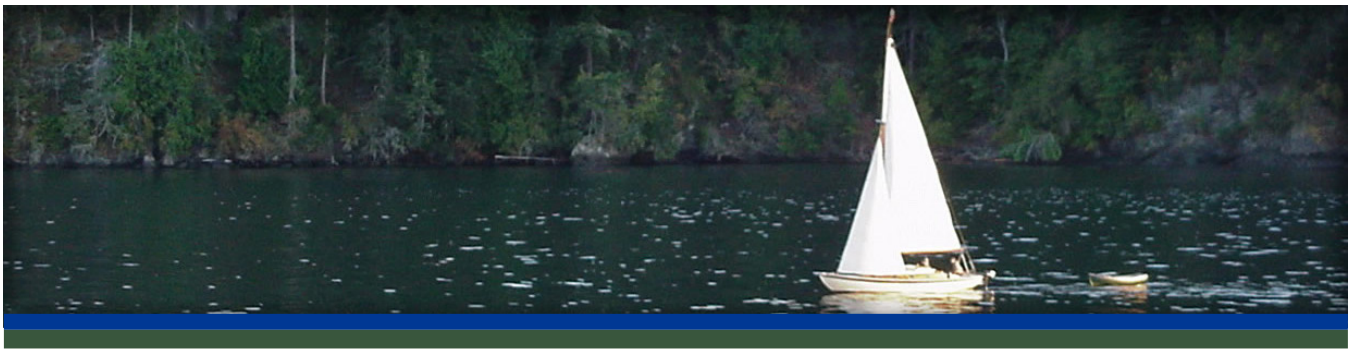
Finally, a similar survey, the 2013 Mid-Atlantic Recreational Boater Survey began in early 2013 to collect spatial and economic data on marine recreational boating activity in the Mid-Atlantic region (including New Jersey, Delaware, Maryland and Virginia). Once completed, spatial data from the Mid-Atlantic survey could supplement the 2012 NE Survey spatial data, affording a more comprehensive look at recreational boating patterns on the East Coast. For more information on the 2013 Mid-Atlantic Survey, contact Tony Macdonald, Urban Coast Institute, Monmouth University at amacdona@monmouth.edu.

35 Data are available on the Northeast Ocean Data Portal or by contacting SeaPlan at info@seaplan.org.

36 The weight should always be divided by the number of months combined for analysis.

Table 30: Operational Challenges Encountered during 2012 NE Survey and Recommendations for Avoiding Challenges in Future

Operational Challenge	Challenge Details	How Challenge Was Addressed	Recommendation for Avoiding Challenges in Future Studies
1. Difficulty obtaining state registration databases	State laws and agency policies vary with respect to the disclosure of personal information collected by agencies and departments. In most cases, data will be made available for purposes of research and when adequate assurances are provided for the limited use and protection of the data. The state boat registration databases were often difficult to obtain due to various privacy concerns. In some cases, it took up to six months to obtain the databases from certain states.	To obtain the state databases, some states required that we 1) make formal requests to the appropriate agencies, 2) agree the lists go to a university-based research center or similar entity with protocols to protect data, 3) will only be used for the purposes of this survey, and 4) agree to not to share the lists with any other entity. After many discussions with state agencies and assistance from state coastal program staff, all but one state (Rhode Island) was able to provide us with all the necessary fields for each state boat registration database.	For future studies, understanding the availability of the databases should occur well in advance of the upcoming boating season (one year in advance of survey launch date). The study team should also be prepared to make formal requests to the appropriate agencies If data will not be released, there are work-arounds, such as having the responsible agency perform the sample selection and recruitment mailing in accordance with the study design.
2. Difficulty obtaining all the information (database fields) necessary to select the random sample of boaters	Most states provided us with all the fields necessary to select the random sample of boaters, except Rhode Island. Due to a Supreme Court ruling, Rhode Island Department of Environmental Management (RIDEM) is not legally authorized to release boaters' mailing addresses, but is allowed to release boaters' names, towns, and zip codes. [1] The Court does note that interested parties have other options available to obtain the addresses.	RIDEM agreed to provide us with boaters' names, towns and zip codes, and we contracted with an outside vendor, Alumnifinder, to match the names/towns/zip codes with mailing addresses.	If government agencies cannot release certain necessary fields of the database, entities can be used to determine mailing addresses.
3. Low response rate to first recruitment mailing	We received a lower than desired response to the first recruitment mailing (approximately ~6,500 responses, and we had hoped for 10,000 - 12,000 responses).	To enhance our response rate, in early June, the team sent out a second, slightly revised recruitment mailing to the 50,000 boaters who had not yet responded to remind them to register. The second mailing contained the same information as the initial mailing, but the design and format were slightly different. More specifically, the envelope contained a tagline, "Help document the importance of boating to [STATE]" to encourage boaters to open the envelope. The team also slightly modified the text of the letter to explain that this was a second mailing. See Appendix __ for the materials included in the second mailing.	If the response to the first recruitment mailing is low, the survey team would recommend sending out a second invitation package to boaters to boost response.
4. Technical errors with administering the surveys	During the surveying period, a few minor, unexpected technical errors occurred when administering the surveys, including: • The survey link in the email text did not appear as a hyperlink; therefore boaters were not able to access the surveys by clicking on the link. The technical support staff received this complaint on occasion from the boaters throughout the boating season. • Upon clicking on the hyperlink, the message "the survey has already been completed" appeared occasionally for some boaters who had not yet completed that Monthly Survey.	The technical support staff fixed error as they arose. At times, the technical support staff sent new emails with survey links to boaters and a note apologizing for any inconvenience.	The survey team should email all Monthly Surveys to the boaters at the beginning of the day, early in the week in case any issues arise. This ensures that technical support staff will be available to fix any problems.
5. Confusion regarding the intent of the Recruitment Survey	Some boaters expressed confusion when they received a link to a Monthly Survey, and contacted the support center stating that they "already completed the survey." These boaters did not realize that the Recruitment Survey was asking for a commitment to a six-month survey, which could explain why a number of boaters did not respond to the Monthly Surveys.	The support center explained to all boaters who expressed confusion that the Recruitment Survey signed boaters up for a six-month survey, and encouraged boaters to participate in the Monthly Surveys. The support center also removed any boaters from the email list who asked to withdraw from the study.	The recruitment mailing should more clearly state that the Recruitment Survey registers the boaters for a six-month survey.



Chapter 6: Conclusions

The 2012 NE Survey helped fill a key data gap in understanding the economic impact and spatial extent of marine recreational boating in the Northeast. Through the two year period of designing and carrying out this large scale human use characterization initiative, we confirmed that the methodological approach of relying on best available technologies and social science tools along with stakeholder informed data collection and interpretation is an effective approach.

Study results estimate that marine recreational boating contributed $3.5 billion to the Northeast economy in 2012, increasing labor demand by an estimated 26,929 year-round jobs. The majority of boaters' expenditures occurred within the state where the boat is registered or documented, and boaters spent the most money on equipment, maintenance, repairs and upkeep. Spatial data collected through this survey show areas of high boating activity close to shore, in semi-protected bays, harbors off of major cities, and along commonly used boating routes. Recreational sportfishing was the predominant activity while boating. Boaters most commonly targeted Striped Bass (*Morone saxatilis*) while fishing in Northeast state waters, and targeted Atlantic Cod (*Gadus morhua*) and Haddock (*Melanogrammus aeglefinus*) in Federal/other state waters.

Boaters also provided useful information on the compatibility of recreational boating with new or existing ocean uses. Most boaters responded that they could continue to enjoy recreational boating near other uses, including commercial fishing, aquaculture (finfish and shellfish farming), conservation and marine protected areas (e.g., sanctuaries), ship/tanker/ferry traffic, and offshore wind farm turbines. Boaters ranked port operations and industrial waterfront as the least compatible with recreational boating.

Results from this survey can be used for a wide-range of purposes by state and regional ocean planning agencies and organizations to help maximize compatibilities and minimize conflicts between new and existing ocean uses and ensure important recreational boating areas are considered during planning efforts. The industry can also use the data to demonstrate the value of marine recreational boating to each state and the Northeast as a whole. Furthermore, the survey data can help with industry business planning, such as locating new/expanding existing facilities, organizing events, and determining ways to more efficiently communicate with the boating community.

Entities could continue analyzing the data collected through this survey to answer a variety of questions about boating activity or the boating community in the Northeast. The survey team is also currently working with MMTA and MA CZM to collect additional expert-verified boating use data to fill gaps industry representatives identified in 2012 NE Survey spatial data. Industry representatives provided recommendations for future studies to capture other aspects of boating and recreational activities in the Northeast, including: recreational fishing, freshwater boating, charter "for hire" vessels, boats registered outside of the Northeast, and other uses such as paddleboarding, kayaking and regattas. Given the value of industry participation in this survey effort, the involvement of industry in future studies documenting ocean use is critical. Furthermore, the survey team encourages industry representatives to remain involved in state and regional ocean planning efforts to ensure proper characterization of this important use of our waterways.

Appendices

Appendix A- Monthly Survey Questions

Monthly Survey

SURVEY INSTRUCTIONS

Thank you for your participation in the Northeast Recreational Boater Survey 2012. You will be asked a short series of questions and then will be asked to map your last boat trip. It should take approximately 15-20 minutes to complete the survey.

For more information about the survey, please go to www.recreation.seaplan.org.

i. **Please don't use your browser's 'back' button. If you need to back up, use the button that appears below each question or screen.**

ii. **The question numbers may not be in numerical order, depending on your responses.**

iii. **After entering each response, click on the 'next' button to continue.**

iv. **When you finish the short series of questions, click the 'Submit' button to finalize and save your responses.**

MONTHLY BOAT TRIP INFORMATION

During this survey you will be asked about your use of your **[VESSEL]** during **[MONTH]**, 2012. It is critical that your answers are based on your use of this specific vessel, even if it is not the boat that you use most frequently.

During this survey, we will be distinguishing between times you launched or boarded your **[VESSEL]** and took it out on the water (which we are calling a "TRIP") and times when you went to your boat but did not venture out on the water (a "VISIT"). So a:

- **VISIT** would be when you went to your **[VESSEL]** **BUT DID NOT TAKE IT ANYWHERE**. For example, you may have been carrying out maintenance on your boat or entertaining friends and family on board; while a
- **TRIP** would be when you were aboard your **[VESSEL]** **AND TOOK IT OUT ON THE WATER**. For this survey, a "trip" starts when you launched or boarded your boat and took it out on the water and ends when you returned. The "trip" should include all the time you were away from your homeport including time on the water and time you spent in ports other than your homeport. Therefore, a trip might span several hours, several days or even several weeks.

If you did go out on the water, once you have answered the questions about your trip, a map will be displayed and you will be asked to indicate where you went on this specific trip.

Please submit your survey even if you did not take your [VESSEL] out on the water this month, as that information is also important.

GENERAL MONTHLY ACTIVITY

1. Do you still own your [VESSEL]?

- ☐ No IF NO SKIP TO END OF SURVEY
- ☐ Yes

2. What type of boat is your [VESSEL]?

- ☐ Open motorboat
- ☐ Cabin cruiser
- ☐ Sailboat
- ☐ PWC / jetski
- ☐ Other

Specify "other": _____

3. **On how many different days during [MONTH] did you visit your [VESSEL] for recreation or maintenance?**
For example, if you spent an hour aboard one day and again the following day, please count this as two days.

Number of days _____ IF ZERO SKIP TO END OF SURVEY

4. **Did you take your boat on a trip out on the water on any of these days aboard?**

☐ No IF NO SKIP TO QUESTION 18

☐ Yes

5. **On how MANY of these days aboard did you take a trip out on the water?**

Number of days _____

6. **How many nights in total did you spend on your [VESSEL] during [MONTH]?**

Number of overnights aboard _____ IF ZERO SKIP QUESTION 8

7. **Based on your answer above, how many of these nights were spent away from your normal berth or mooring location (i.e. either underway or at a transient berth or mooring in another town)?**

Number of overnights away from usual mooring _____

LAST "ON WATER" BOAT TRIP OF THE MONTH

The following questions ask specifically about the **LAST "ON WATER" BOAT TRIP** *you made on your* **[VESSEL]** *during* **[MONTH]**.

Even if you were only out on the water for a short trip, we would like you to answer the following questions.

8. **Was the last "on water" boat trip on your [VESSEL] during [MONTH] a day trip or an overnight trip?**

☐ Day trip

☐ Overnight trip

9. **How many nights were you away from your usual residence?**
(For example, from the time you left your home to the time you returned.)
If you live aboard your boat, indicate the number of nights away from your normal berthing location (e.g. slip, mooring etc.).

Number of nights _____

10. **Did you trailer your [VESSEL] to a launch site as part of this trip?**

☐ No

☐ Yes

11. **Approximately how many miles did you drive (or otherwise travel) to reach the place where you launched or boarded your [VESSEL]?**

Number of Miles: _____

12. **Please provide information about the site from which you launched or boarded your [VESSEL]:**

Town or city _____

State _____

13. **What was the purpose of this trip?**

Please check all that apply:

Entertaining family / friends
Fishing / shellfishing
Whale watching
Transportation (simply as a means to get from one place to another)
Bird watching

Racing
Scuba diving / snorkeling
Hunting
Sightseeing
Swimming
Waterskiing / wakeboarding
Other

14. Was this last trip taken as part of the [Memorial Day Weekend] / [4th of July Weekend] / [Labor Day Weekend]?

☐ No
☐ Yes

LAST BOAT TRIP OF THE MONTH SPENDING

15. Approximately how much money did you and your party spend in each category below as part of the last "on water" boat trip on your [VESSEL] in [MONTH]?
Include both spending in preparation for and during this specific trip.
IF YOU DID NOT SPEND MONEY IN A CATEGORY, PLEASE ENTER ZERO.
When entering costs in dollars, you do NOT need to enter a dollar sign ($).

	Amount ($)
Boat fuel and oil	_____
Transient/guest dockage (marina fee)	_____
Launch or parking fees at a ramp	_____
Pumpout fees	_____
Restaurant meals & drinks (including take-out food & drinks)	_____
Groceries	_____
Auto gas and oil	_____
Shopping and souvenirs	_____
Recreation and entertainment	_____
Lodging (hotel/motel)	_____
Lodging (camping/B&B)	_____
Fishing gear, bait, ice etc.	_____
Equipment, maintenance, repairs and upkeep	_____
Other	_____

Specify "other": _____

16. Approximately what PERCENT of the total spending you have just listed occurred IN THE STATE where you launched or boarded your boat on this specific trip?

Your best guess will do.

0%
1 - 10%
11 - 20%
21 - 30%
31 - 40%
41 - 50%
51 - 60%
61 - 70%
71 - 80%
81 - 90%
91 - 99%
100%

17. **You just stated that you spent between __ and __ of your money in the state where you launched or boarded your boat. Where did you spend the remaining money?**

Please check all that apply
Maine
New Hampshire
Massachusetts
Rhode Island
Connecticut
New York
Other
Please enter any states where you spent remaining money _____

SKIP TO END OF SURVEY

LAST VISIT OF THE MONTH SPENDING

You just indicated you did not take your boat out on the water during [MONTH], but that you did visit your boat during that month. The following questions ask specifically about the LAST TIME you visited your [VESSEL] during [MONTH].

18. **Approximately how many miles did you drive (or otherwise travel) in total to reach the place where you visited your boat? Please include mileage both to and from your boat.**

Number of miles:

19. **Where was the boat located when you visited it?**

Town or city:
State:

20. **Was the last time you visited your [VESSEL] during [MONTH] a day visit or an overnight visit?**

- ☐ Day visit
- ☐ Overnight visit

21. **How many nights were you away from your usual residence on this visit to your [VESSEL]?**

(For example, from the time you left your home to the time you returned.)

Number of nights _____

22. **Approximately how much money did you and your party spend in each category below as part of the last time you visited your [VESSEL] in [MONTH]?**

Include both spending in preparation for and during this specific trip.
IF YOU DID NOT SPEND MONEY IN A CATEGORY, PLEASE ENTER ZERO.
When entering costs in dollars, you do NOT need to enter a dollar sign ($).

	Amount ($)
Boat fuel and oil	_____
Transient/guest dockage (marina fee)	_____
Pumpout fees	_____
Restaurant meals & drinks (including take-out food & drinks)	_____
Groceries	_____
Auto gas and oil	_____
Shopping and souvenirs	_____
Recreation and entertainment	_____
Lodging (hotel/motel)	_____
Lodging (camping/B&B)	_____

Fishing gear, bait, ice etc. _____

Equipment, maintenance, repairs and upkeep _____

Other _____

Specify "other": _____

23. Approximately what PERCENT of the total spending you have just listed occurred IN THE STATE where your boat was located?

Your best guess will do.

0%
1 - 10%
11 - 20%
21 - 30%
31 - 40%
41 - 50%
51 - 60%
61 - 70%
71 - 80%
81 - 90%
91 - 99%
100% SKIP Q24

24. You just stated that you spent between __ and __ of your money in the state where your boat was located. Where did you spend the remaining money?

Please check all that apply
Maine
New Hampshire
Massachusetts
Rhode Island
Connecticut
New York
Other
Please enter any states where you spent remaining money _____

SKIP TO END OF SURVEY

PARTICIPANTS WHO NO LONGER OWNED THEIR BOAT WOULD SEE THE FOLLOWING MESSAGE AT THE END OF THE SURVEY:

Thank you for signing on to the Northeast Recreational Boater Survey and providing us with this information. As you do not own the boat we are interested in, all you need to do is click on the "Next" button, and then click on "Submit" on the following page. No further information is needed.

If you do own the selected vessel, please click on the "back" arrow at the bottom of this page, change your answer to "Yes," and complete the survey.

OTHER PARTICIPANTS WHO DID NOT VISIT THEIR BOAT WOULD SEE THE FOLLOWING MESSAGE:

Thank you for signing on to the Northeast Recreational Boater Survey and providing us with this information. Because you did not visit your boat for recreational or maintenance purposes, all you need to do is click on the "Next" button, and then click on "Submit" on the following page. No further information is needed.

If you did visit your boat for recreational or maintenance purposes, please click on the "back" arrow at the bottom of this page, enter the correct answer and complete the survey.

ALL PARTICIPANTS WHO VSISTED OR USED THEIR BOAT WOULD SEE THIS FINAL MESSAAGE:

Thank you for your participation! We greatly appreciate your time.

You MUST click the Submit button to finalize and save your responses.

If you took your boat out on the water you will be asked to map this trip.

If you did NOT take your boat out on the water you will be directed to our website, www.recreation.seaplan.org.

If you have any questions, please send an e-mail to kstarbuck@seaplan.org.

Thank you again for your time!

Appendix B - Mailing to Recruit Boaters for Survey

Northeast Recreational Boater Survey

Invitation to Participate

Your Unique ID #: [IDNUMBER]

[DATE]
[PERSON_NAME]
[ADDRESS]
[CITY], [STATE] [ZIP_CODE]

Dear [PERSON_NAME],

You have been selected from your state or the U.S. Coast Guard boat registration list to participate in the **2012 Northeast Recreational Boater Survey**. Your participation is important 1) to help ensure your favorite boating areas are considered in ocean planning and 2) to accurately represent the value of saltwater recreational boating to your state's economy.

Participating in the survey is easy. Each month from May to October this year, you will be asked to go online to report on your most recent boating trip and any spending associated with that trip. For more information on the survey, please see the details on the back of this letter or visit the survey website at: www.neboatersurvey.org.

This study is being conducted by SeaPlan, an independent nonprofit organization, in partnership with the recreational boating industry, the Northeast Regional Ocean Council and the University of Massachusetts. Financial support for the survey comes from a combination of public, foundation and private sources.

Participation Comes With Perks: Cash & Prizes

The success of this survey depends on your participation. Survey sponsors have provided numerous prizes for participants. Just for signing up, you will be entered into a drawing to win a **$1,000** cash prize. Each time you complete a monthly questionnaire throughout the boating season, you will be entered into a monthly prize drawing and an end of season grand prize drawing. There will be a total of seven grand prizes: a **$5,000** prize for one boater from the Northeast region, and six **$1,000** prizes for boaters from each of the six participating states. Learn more at www.neboatersurvey.org.

You can end your participation at any time and still be eligible to win a prize. A valid email address is required for participation, but it will only be used to communicate with you about this survey. If you have questions, please send an email to help@seaplan.org.

Two Easy Ways to Participate:

- Register online at www.neboatersurvey.org and enter Your Unique ID# printed above, **OR**
- Complete the enclosed questionnaire and return it in the postage-paid envelope.

Thank you for your participation, and I wish you a safe and fun boating season.

Sincerely,

Stephanie Moura, Executive Director

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89 South Street • Boston MA 02111 • www.SeaPlan.org

What is this survey about?

For six months (May through October 2012), the survey will collect information from thousands of saltwater recreational boaters in the Northeast (including NY, CT, RI, MA, NH and ME) on where and how often they go boating, activities they engage in while boating (e.g., fishing, diving) and how much money they spend while boating. We will combine responses to produce maps of saltwater recreational boating areas and to approximate the total economic impact of recreational boater spending. The survey results will be available to support the long term interests of recreational boating in the Northeast.

What is involved in taking the survey?

Participants will be contacted by email each month to complete a brief online questionnaire (~15 minutes). Questions will focus on a single boating excursion during the prior month, and participants will be asked to plot their boating routes. We will send periodic emails to let boaters know when it is time for the next survey.

Why is the survey being undertaken?

While there are growing demands for new uses of our coastal areas, (e.g., wind farms, LNG terminals or fish farms), recreational boating activity areas remain largely un-documented. To ensure recreational boating interests receive appropriate consideration in management decisions for our increasingly crowded coastal areas, the results of the survey will be used to map recreational boating patterns and estimate the economic impact of boater spending.

Why should I participate?

In addition to doing your part to help ensure your favorite boating areas are considered in ocean planning, you will also be eligible for prizes ranging from cash to boat accessories to overnight stays at select marinas. Note: While your participation is extremely important, this study is voluntary – even if you initially agree to participate, you can withdraw at any time. **We will hold all survey information in the strictest confidence. No individual's personal information will be made available to others.**

How was I selected?

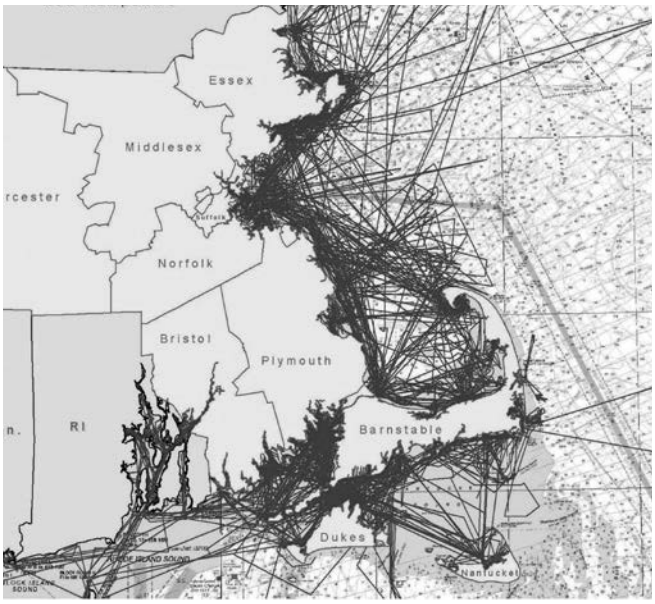
You are one of 60,000 boaters in the Northeast randomly selected from either 1) boat registration lists provided by the states of NY, CT, RI, MA, NH and ME, or 2) the U.S. Coast Guard documented vessel list.

Who is doing the survey?

SeaPlan, an independent nonprofit organization, is leading the study team, which includes the Northeast Regional Ocean Council, coastal planners from each state in the Northeast, and the University of Massachusetts. This study is being conducted in partnership with members of the boating industry and a variety of boating and sailing organizations. See the complete list at www.neboatersurvey.org.

Has this been done before?

Yes. SeaPlan successfully conducted a similar survey in Massachusetts in 2010. A summary of that survey and the entire report is posted at www.neboatersurvey.org and www.SeaPlan.org.



The map above showing saltwater recreational boating routes was created using information from boaters in the 2010 Massachusetts Recreational Boater Survey.

Northeast Recreational Boater Survey

Two Easy Ways to Participate in the 2012 Northeast Recreational Boater Survey

Option 1: Online Registration

Go to www.neboatersurvey.org, enter this Unique ID #: **[IDNUMBER]**, and fill out a short survey.

Option 2: Mail-in Registration Form

Complete the questions below and return in the enclosed postage-paid envelope.

1. Do you currently own a [BOAT_LENGTH] foot boat? (check one)

YES ☐ NO ☐

If we incorrectly identified you as the registered / documented owner of this boat, please simply check this box ☐ and return the survey in the enclosed envelope. Thank you for your help.

IMPORTANT:
Even if you own other boats, for this survey we are only asking questions about the boat referenced in question #1.

2. Please check True or False for the following statements as they pertain to the boat listed in question #1.

True	False	
☐	☐	I only use this boat on freshwater rivers or lakes
☐	☐	I only use this boat for commercial purposes (e.g. charter fishing, commercial diving)
☐	☐	I only use this boat to access another boat (i.e. dinghy or tender)

3. Please check ALL THE STATE WATERS in which you expect to use the boat listed in question #1 during the 2012 boating season.

☐ Maine ☐ New Hampshire ☐ Massachusetts
☐ Rhode Island ☐ Connecticut ☐ New York
☐ Other

4. Last year, how many times did you take the boat listed in question #1 out on the water?

☐ Less than 5 times ☐ 6 to 10 times
☐ 11 to 25 times ☐ More than 25 times

Once we receive your registration, we will send you an email with directions and a link to the survey. At that time you will be entered into a drawing for a $1,000 cash prize. We will only use your email for this survey.

Please carefully print your email in CAPITAL LETTERS below. Like this:
(If we can't read your email, we can't register you for the $1,000 cash prize) JOHN.DOE@GMAIL.COM

5. Your email address: _____

Return completed form in the enclosed postage-paid envelope. Thank you for your participation.

Appendix C - Prize Donations

Prize Donations

- SeaPlan - $5,000 Cash Grand Prize
- SeaPlan - $1,000 Cash Prizes for Each State (six total)
- Boat Name Gear - $100 Gift Certificate
- US Harbors - Two, $100 Cash Prizes
- Grady-White - Two $100 Cash Prizes
- Marina Bay on Boston Harbor - $100 Cash Prize
- Marina Bay on Boston Harbor - Two Night Stay ($400 Value)
- Massachusetts Marine Trade Association - Two, $100 Cash Prizes
- Ben & Jerry's - 10 Free Pints of Ben & Jerry's Ice Cream
- Connecticut DEEP Boating Division - 5 Manually Inflated Vest-Type Inflatable Life Jackets
- Boston Harbor Cruises - Two Adult Tickets to a Whale Watch ($100 value)
- Boston Harbor Cruises – Two Tickets for Ferry Trip
- Sea Tow – Three Gold Card Memberships
- Kent Fabrications - Fabrication Services ($100 value)
- 4 Points Barware - Gift Certificate ($100 value)
- Cozy Grip Boat Seat Covers - Gift Pack ($100 value)
- The Trustees of Reservations - Two Family Memberships
- Onboard Interiors - Marine-grade Pillow ($150 value)
- Newburyport Marinas - 1 Night Dockage
- Connecticut Marine Trade Association - $100 Cash Prize

Appendix D - Email Notification Text for Monthly Surveys

Email Notification Text

Dear [NAME],

As you know, the Northeast Recreational Boater Survey is underway and you kindly agreed to participate. However, we have not yet received your online completed survey about your boating activity (if any) during July. Please take a few moments to complete this survey as soon as you can by clicking the link below. Thank you!

Please note that the link should only be opened on a desktop or laptop computer. The survey will not work on a smartphone or ipad.

If you have any trouble with the link, please copy the whole link (including any letters or numbers that may follow on a separate line) and paste into your web browser.

http://www.snapsurveys.com/swh/surveylogin.asp?k=134383127214&i=42ECE44D051216C5A9

IMPORTANT REMINDERS:

- Please complete the survey **even** if you did not visit your boat or did not go out on the water during the month of July.
- Each completed monthly survey will give you an additional entry into the end-of-season prize drawing with a grand prize of $5,000 to one boater in the Northeast, and for one additional $1,000 prize for a boater just from your state.
- For each completed monthly survey, your name will also be entered into that month's prize drawing. Prizes this month include $100 donated by Marina Bay Boston, a Sea Tow Gold Membership, a $100 gift certificate to 4 Points Barware, and 5 manually inflated vest-type life jackets for 5 CT boaters, donated by CT DEEP Boating Division.
- The information that you provide during the 2012 boating season is CRITICAL to help calculate the economic impact of recreational boating and ensuring your favorite boating areas receive appropriate attention in ocean planning in the Northeast.

If you are having problems accessing the survey or completing the mapping part of the survey, we would be happy to guide you through it. Please contact us at help@seaplan.org or 617-737-2600 ext. 102 (during business hours).

Thank you for participating in this survey.

The Northeast Recreational Boater Survey Team

Appendix E - Details on the Online Mapping Application

Technical Specs

The technology stack for the Northeast Recreational Boater Survey includes hardware and software infrastructure, web-service scripting, and spatial database implementation.

Initial development activities occurred on a single cloud-based server provided by Rackspace (rackspacecloud.com). Ubuntu 11.10 (Oneiric Ocelot) Linux was selected as the operating system. Server specifications were initially set to the minimum available; 256 MB memory and 10 GB storage. As development activities proceeded, the server was scaled up on an as-needed basis. A production server was cloned (once the survey had taken shape) from the development server at a size of 1GB memory and 40GB storage. To meet the processing and content-delivery requirements of the final application, server specifications will be scaled to 4GB memory and 160GB storage. During the survey period (May through November 2012), both the development and production server instances will be active. After the survey is complete, the development server will be scaled back to 256 MB, and the production server to 512 MB. Both servers will remain active for demonstration and testing purposes only.

Technology Stack

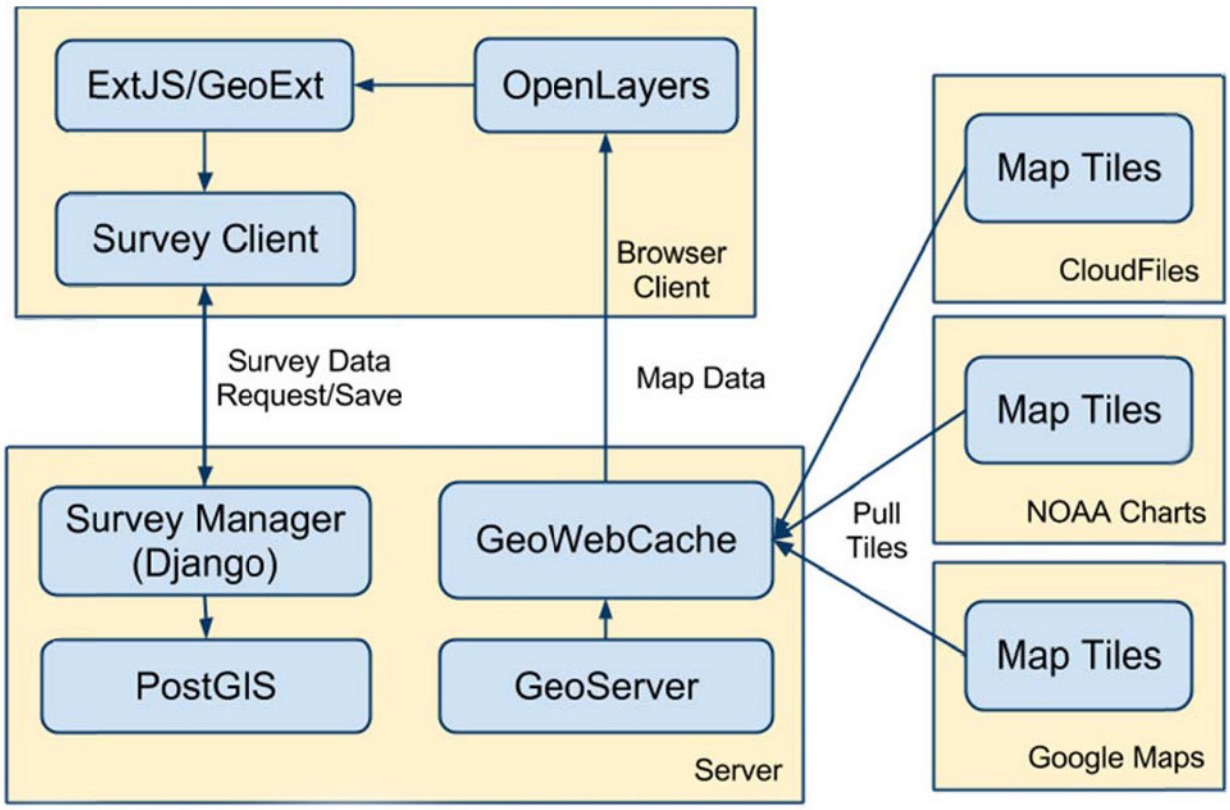
The mapping portion of the NROC Recreational Boater Survey consists of a web browser client providing the interactive map and question panels along with a server component that can be broken up into the web client, which is the browser, and utilizes a number of complementary free and open source tools.

Web Client

The web client consists of OpenLayers providing the interactive map and GeoExt providing other spatially-enabled and querying information from the server. It presents the question panels and handles the logic to capture and validate input.

Server

The server contains the database, the site framework, and other supporting software that the client may need. The database is PostGIS - a PostgreSQL database modified to handle spatial data. The web framework is Django - a python based tool used for quickly building, changing, and deploying web sites and applications. The server also has GeoServer with GeoWebCache on it, to aid in collecting and assembling the map tile images for the client to display as a single layer. The maps themselves come from several sources, including NOAA's nautical chart WMS server, some Rackspace Cloudfiles where we have cached most of the nautical charts we will need from NOAA (so that they are not burdened by us), and Google Maps for the 'Satellite' and 'Road Map' layers.


ExtJS/GeoExt
OpenLayers
Survey Client
Browser Client
Survey Data Request/Save
Map Data
Survey Manager (Django)
GeoWebCache
PostGIS
GeoServer
Server
Pull Tiles
Map Tiles
CloudFiles
Map Tiles
NOAA Charts
Map Tiles
Google Maps

Appendix F - End of Season Survey Questions

Northeast Recreational Boater Survey

END OF SEASON SURVEY

Thank you for your participation in the Northeast Recreational Boater Survey 2012.

The questionnaires that you have completed so far have asked about individual boat trips.

Now, this survey asks you to estimate spending in the last 12 months for your boat that was not trip-specific (for example: boat loans, winter storage, maintenance, repairs, etc.)

It should take approximately 15-20 minutes to complete the survey. For more information about the survey, please go to www.neboatersurvey.org.

1. Please don't use your browser's 'back' button. If you need to back up, use the button that appears below each question or screen.
2. The question numbers may not be sequential, depending on your responses.
3. After entering each response, click on the 'next' button to continue.
4. When you finish the short series of questions, click the 'Submit' button to finalize and save your responses.

1.1. **In the LAST 12 MONTHS, did you spend any money on equipment, maintenance and repair of your boat in any of the following categories?**

When entering cost in dollars, please estimate to nearest $10. You do NOT need to enter a dollar sign ($).

If you did not spend money in a category please enter zero.

Routine vessel maintenance, including parts and labor (e.g., winterize, commission, cleaning, tune ups, haul out)	☐
Repairs to existing vessel, including parts and labor (e.g., engine, underwater gear, hull, electronics, canvas, sails, upholstery)	☐
Purchase of a new trailer	☐
Safety-related equipment (e.g., personal flotation devices (PFDs), inflatable flotation devices, flares, first aid kits, fire extinguishers, vapor detectors)	☐
Purchase of new equipment or upgrades for the vessel, including parts and installation labor (e.g., engine, electronics, tops, seats, parts, sails, supplies, gear, accessories)	☐

Originals printed on 8.5" x 11" paper

1.2. **Did you spend money on any of the following non-trip-specific items associated with your boat in the LAST 12 MONTHS?**

When entering cost in dollars, please estimate to nearest $10. You do NOT need to enter a dollar sign ($).

If you did not spend money in a category please enter zero.

Boat loan payments	
Boat insurance (e.g. hull, port, risk, liability, theft, fire)	
State registration, trailer registration and/or USCG documentation fees	
Taxes (e.g., personal property, excise)	
Fishing-related expenses (e.g., licenses, tags, tournament fees)	
Dockage, mooring, storage (both during and out-of-season)	

1.3. **In the LAST 12 MONTHS, did you have OTHER non-trip specific expenditures for your boat that you did not list in the previous two questions?**

- ○ Yes
- ○ No

1.3.a **What did you spend money on?**

Do not include a Dollar amount as we will ask you to enter that information in the next question.

1.3.b **What was the total amount you spent on the items listed in the previous question?**

When entering cost in dollars, please estimate to nearest $10. You do NOT need to enter a dollar sign ($).

Enter total amount

1.4. **Approximately what PERCENT of the total spending you have just listed in the previous THREE questions occurred IN THE STATE where your boat is registered?**

Your best guess will do.

- ○ 0%
- ○ 1 - 10%
- ○ 11 - 20%
- ○ 21 - 30%
- ○ 31 - 40%
- ○ 41 - 50%
- ○ 51 - 60%
- ○ 61 - 70%
- ○ 71 - 80%
- ○ 81 - 90%
- ○ 91 - 99%
- ○ 100%

1.5. **You just stated that you spent {Q28} of your money in the state where your boat is registered. Where did you spend the remaining money?**

Please check all that apply

- ☐ Maine
- ☐ New Hampshire
- ☐ Massachusetts
- ☐ Rhode Island
- ☐ Connecticut
- ☐ New York
- ☐ Other

If other, please enter any states where you spent remaining money

1.6. **How would you rate your boating activity on your boat in 2012 compared to other years?**

- ○ Much more active than usual
- ○ Slightly more active than usual
- ○ Similar to other years
- ○ Slightly less active than usual
- ○ Much less active than usual
- ○ Don't know

1.7. **Why do you think your boating activity changed this year?**

Please check all that apply

- ☐ Economy
- ☐ Weather
- ☐ Personal health
- ☐ Fuel prices
- ☐ Other

If other, please enter any other reasons your boating activity changed this year.

The following questions are of interest to the Marine Trades Associations and the entire recreational boating industry.

1.8. **Are you...**

- ○ Male
- ○ Female

1.9. **What is your current age?**

☐

1.10. **What is your best guess of your annual household income from 2011?**

- ○ Less than $25,000
- ○ $25,000 to $49,999
- ○ $50,000 to $74,999
- ○ $75,000 to $99,999
- ○ $100,000 to $124,999
- ○ $125,000 to $149,999
- ○ $150,000 to $174,999
- ○ $175,000 to $199,999
- ○ $200,000 or greater

1.11. **Have you ever taken a navigation class?**

- ○ Yes
- ○ No

1.11.a Where did you take your navigation class?

- ○ Through the USCG Auxiliary or US Power Squadrons
- ○ Through another organization

If through another organization, what organization was it?

1.12. What is your major safety concern on the water? Check all that apply.

- ☐ Inconsiderate actions by others
- ☐ Hazards (such as rocks, shallow water)
- ☐ Lack of knowledge of navigation rules by others
- ☐ Use of alcohol by boat operators
- ☐ Lack of personal flotation devices on board
- ☐ Too many people on vessels
- ☐ Something else

If somethine else, what is your major safety concern on the water?

1.13. How often did you wear a lifejacket on the boat during this season?

- ○ All the time
- ○ Most of the time
- ○ Some of the time
- ○ Never or rarely

1.14. Why don't you wear a lifejacket more often? Check all that apply.

- ☐ Uncomfortable
- ☐ Don't feel the need
- ☐ Not required to wear one
- ☐ Some other reason

If for some other reason, what is that?

1.15. If an *online* boating course leading to certification was available, would you have considered it as an option to get your boating certificate?

- ☐ Yes
- ☐ No
- ☐ NA (My state does not require a boating certificate)

1.16. **Sometimes boating can occur near other activities. In your opinion, how likely is it that you can continue to enjoy boating near the following structures or activities?**

	Very likely	Somewh at likely	Undecid ed	Somewh at unlikely	Very unlikely
Offshore Wind Farm Turbines	○	○	○	○	○
Ship/Tanker/Ferry Traffic	○	○	○	○	○
Port operations and industrial waterfront	○	○	○	○	○
Aquaculture (Finfish and Shellfish Farming)	○	○	○	○	○
Commercial Fishing	○	○	○	○	○
Recreational (Sport) Fishing	○	○	○	○	○
Conservation and marine protected areas (e.g., sanctuaries)	○	○	○	○	○

PLEASE HELP US IMPROVE THE BOATER SURVEY

The following few questions ask for your feedback.

1.17. **Please rate the ease of use of the Northeast Recreational Boater Survey:**

- ○ Very easy
- ○ Somewhat easy
- ○ Somewhat difficult
- ○ Very difficult

1.18. **Please provide any other thoughts, suggestions or comments you might have on improving the Northeast Recreational Boater Survey?**

1.19. **How willing would you be to participate in a similar boating survey in the future?**

- ○ Very willing
- ○ Somewhat willing
- ○ Not very willing
- ○ Not at all willing

1.20. **Additional comments on the Northeast Recreational Boater Survey 2012 are welcome.**

Boaters Share Your Adventures: Join the Boater Survey Storytellers Group

As a successful year of boater surveying comes to a close, we know many of you have great stories to tell about your boating season that would help us show others the importance of saltwater recreational boating. We want to quote these stories in newspaper articles, during presentations and in reports, so that there are real boaters' perspectives included in survey reporting materials. If you would like to share your opinions and experiences, please sign up for our storyteller's group. Then over the next couple of months, I will email the group specific questions like "what is the craziest thing you saw this year on the water" or "what is your favorite thing about boating", or "what scared you the most on the water this year?" Poetic waxing is encouraged and pictures are fabulous.

Would you like to take part in this?

- ○ Yes (your email will be added to the Storytellers Group)
- ○ No (your email will not be added to the Storytellers Group)

1.22. **We thank you for your participation throughout this boating season. If possible, we would appreciate if you would take time to do one last monthly trip survey to report on any boating activity during the month of October.**

We would appreciate a response even if you did not take your boat out on the water during the month of October.

For taking the time to complete an October survey, we will provide you with an additional entry into the grand prize drawings for $5000 AND $1000 for your state!

- ○ Yes, I am willing to answer an October survey
- ○ No, I am not willing to answer an October survey

SURVEY INSTRUCTIONS

Thank you for your participation in the Northeast Recreational Boater Survey 2012. You will be asked a short series of questions and then will be asked to map your last boat trip. It should take approximately 15 minutes to complete the survey.

1. Please don't use your browser's 'back' button. If you need to back up, use the button that appears below each question or screen.

2. After entering each response, click on the 'next' button to continue.

3. When you finish the short series of questions, click the 'Submit' button to finalize and save your responses.

4. The question numbers may not be sequential, depending on your responses.

5. The reset button will erase only the responses on the current page but not your previous answers.

For more information about the survey, please go to www.neboatersurvey.org.

Monthly Boat Trip Information

During this survey you will be asked about your use of your {BOATSIZE} {FOOT} boat during October, 2012. It is critical that your answers are based on your use of this specific boat, even if it is not the boat that you use most frequently.

This survey distinguishes between a "TRIP" and a "VISIT".

A VISIT would be when you went to your boat but DID NOT TAKE IT ANYWHERE. For example, you may have been carrying out maintenance on your boat or entertaining friends and family on board.

A TRIP would be when you were aboard your boat and TOOK IT OUT ON THE WATER. A "trip" starts when you launch or board your boat and ends when you return to the place you started. The "trip" should include all the time you were away from your homeport including time on the water and time you spent in ports other than your homeport. Therefore, a trip might span several hours, several days or even several weeks.

Please submit your survey even if you did not take your boat out on the water this month, as that information is also important.

GENERAL MONTHLY ACTIVITY

2.1. Do you still own your boat?

- ○ No
- ○ Yes

2.2. **What type of boat do you have?**

- ○ Open motorboat
- ○ Cabin cruiser
- ○ Sailboat
- ○ PWC /Jetski
- ○ Other (specify on next page)

What other type of boat do you have?

2.3. **On how many different days during October were you on your boat for recreation or maintenance?**

For example, if you spent an hour onboard one day and again the following day, please count this as two days.

Number of days: ☐

2.4. **Did you take your boat on a trip out on the water on any of these days aboard?**

- ○ No
- ○ Yes

2.5. **On how many of these days aboard did you actually take a trip out on the water?**

Number of days: ☐

2.6. **How many nights in total did you stay on board your boat during October?**

Number of overnights aboard: ☐

2.7. **Based on your answer above, how many of these nights were spent away from your normal berth or mooring location (i.e. either underway or at a transient berth or mooring in another town)?**

Number of overnights away from usual mooring: ☐

LAST "ON WATER" BOAT TRIP OF THE MONTH

The following questions ask specifically about the* LAST "ON WATER" BOAT TRIP *that you made on your boat during October.

Even if you were only out on the water for a short trip, we would like you to answer the following questions.

2.8. **Was the last "on water" boat trip on your boat during October a day trip or an overnight trip?**

- ○ Day trip
- ○ Overnight trip

2.9. **How many nights were you away from your usual residence on this trip? (For example, from the time you left your home to the time you returned.)**

If you live aboard your boat indicate the number of nights away from your normal berthing location (e.g. slip, mooring etc.).

Number of nights: ☐

2.10. **Did you trailer your boat to a launch site as part of this trip?**

- ○ No
- ○ Yes

2.11. **Approximately how many miles did you drive (or otherwise travel) in total to reach the place where you launched or boarded your boat? Please include mileage both to and from your boat.**

Number of miles: ☐

2.12. **Please provide information about the site from which you launched or boarded your boat.**

Town or city: ☐

State:

--Click Here--
- Maine
- New Hampshire
- Massachusetts
- Rhode Island
- Connecticut
- New York
- Other

From what other state did you launch your boat?

☐

Appendix G - Announcement for Open Survey

New Online Route Mapping Program Available to Saltwater Boaters

All saltwater boaters are now invited to go online and map their boating routes this summer to help researchers better understand boating activity in the Northeast. The information gathered from this open online mapping program will supplement the data being collected through the more rigorous 2012 Northeast Recreational Boater Survey, which is a monthly online survey that thousands of randomly selected boaters from New York to Maine were invited to participate in earlier this year. Information from both efforts will document the importance of recreational boating to the Northeast and will ensure boating activity receives appropriate consideration in ocean planning.

Boaters may access the open online mapping tool at http://recreation.seaplan.org/to-participate. Participants can report on as many boating trips as they like, and are encouraged to provide optional information on fishing, swimming, and other boating activities.

The 2012 Northeast Recreational Boater Survey is being conducted with the support of Marine Trades Associations, Boating and Yacht Clubs Association, Sailors for the Sea, and others. SeaPlan, an independent nonprofit organization, is leading the study team, which includes the University of Massachusetts, Ecotrust, and the Northeast Regional Ocean Council. Learn more at www.neboatersurvey.org.

Boaters We Need Your Help!

Participate in the 2012 Northeast Recreational Boater Survey

This May, boaters in NY, CT, RI, MA, NH and ME were mailed invitations to participate in a survey that will document saltwater recreational boating routes and define boaters' contribution to state economies.

- Results from this survey will show policy makers the value of boating, inform marine business planning and depict boating activity for use in ocean planning.
- Sponsors have provided incentive prizes for participants, including a grand prize drawing of **$5,000.**
- Boaters that do not receive an invitation in the mail are encouraged to participate in a volunteer survey.

Your input will benefit recreational boating in the Northeast

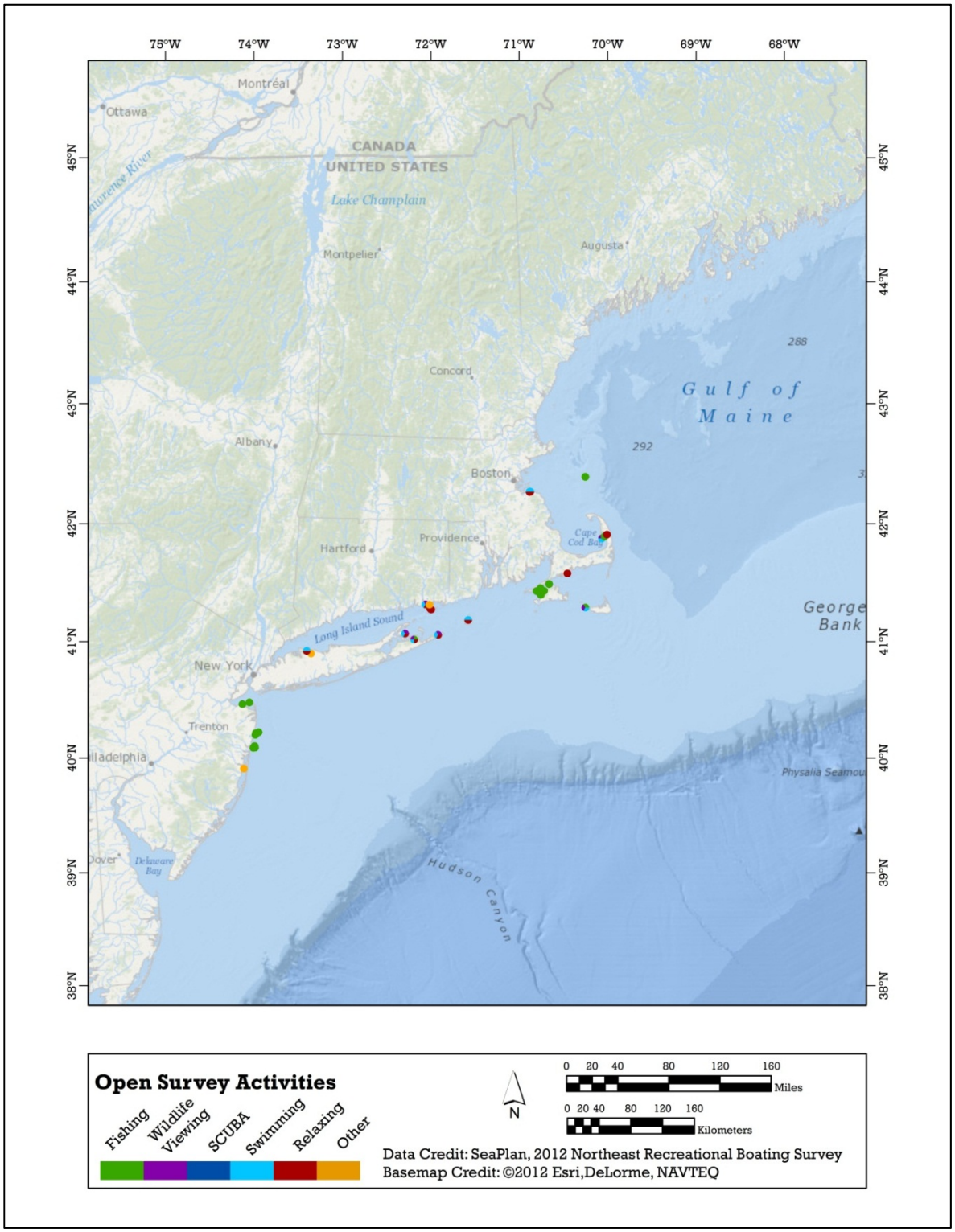
Northeast Recreational Boater Survey

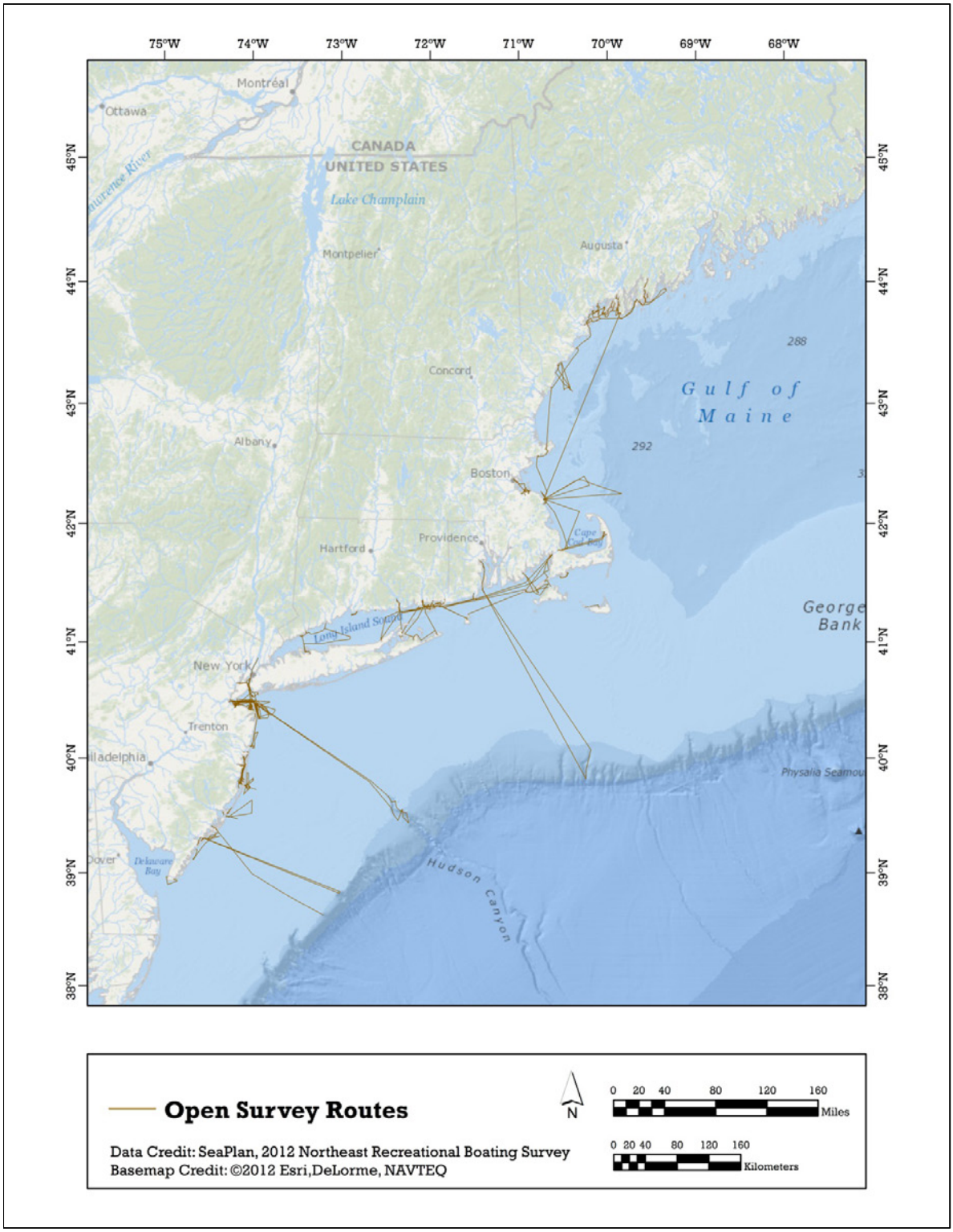
Learn more at www.neboatersurvey.org

SeaPlan, an independent nonprofit organization, is partnering with the Northeast Regional Ocean Council, the boating industry, the University of Massachusetts, and state coastal management programs to conduct this survey.

SeaPlan | 89 South Street | Boston MA 02111 | (617) 737-2600 ext. 102 | www.neboatersurvey.org

Appendix I - Boating Data Collected Through Open Survey




75°W
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Montréal
Ottawa
CANADA
UNITED STATES
Lake Champlain
Montpelier
Augusta
Concord
Albany
Boston
Hartford
Providence
New York
Trenton
Gulf of Maine
George Bank
Long Island Sound
Hudson Canyon
Delaware Bay
288
292
Open Survey Routes
N
0 20 40 80 120 160
Miles
0 20 40 80 120 160
Kilometers
Data Credit: SeaPlan, 2012 Northeast Recreational Boating Survey
Basemap Credit: ©2012 Esri,DeLorme, NAVTEQ

Appendix J - Announcement for 2012 NE Survey

Boaters Watch Your Mailboxes! New Survey Invites Boat Owners to Inform Ocean Management in the Northeast

Starting this spring, SeaPlan is partnering with the Northeast Regional Ocean Council, the boating industry, University of Massachusetts and state coastal planners to conduct the 2012 Northeast Recreational Boater Survey that will document popular saltwater recreational boating routes and define boaters' contribution to state and regional economies. In May, 60,000 randomly selected boat owners from ME, NH, MA, RI, CT and NY will receive an invitation in the mail requesting participation in the survey. Each month, researchers will ask participating boaters to log onto a mapping website where they can draw their last boating trip on an interactive navigation chart and include information about fishing, wildlife viewing or other activities they did during their trip. Boaters will also be asked how much money they spent on various boating-related activities. Sponsors have provided incentive prizes for participants, including a grand prize of $5,000. Boaters that do not receive an invitation in the mail are encouraged to participate in a separate volunteer survey. Survey results will help policymakers consider recreational boating activity when siting projects in coastal areas. Boaters and the boating industry can also use survey results to promote access to favorite boating locations and to aid in business planning for the boating industry. See the complete list of partners and participate in the volunteer survey at www.neboatersurvey.org.

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PRESS RELEASE

2012 Northeast Recreational Boater Survey

SEAPLAN
VIBRANT ECONOMIES • HEALTHY OCEANS

Media Contact: Kim Starbuck
617.737.2600 ext. 102
kstarbuck@seaplan.org

Date: April 30, 2012

Boaters Watch Your Mailboxes - New Survey Invites Boat Owners to Inform Ocean Management in the Northeast

The 2012 Northeast Recreational Boater Survey will collect real world information on boating routes and economic activity from boaters in ME, NH, MA, RI, CT and NY.

Boston, MA – This May, 68,000 boat owners in the Northeast will receive invitations to participate in a survey that will document saltwater recreational boating routes and define boaters' contribution to state economies. Survey results will help coastal planners consider recreational boating activity during ocean planning and when reviewing proposals for new coastal and offshore development projects. Boaters and the boating industry can also use the survey results to show the importance of recreational boating and to inform business planning. This survey will build off the successes of the Massachusetts Recreational Boater Survey which thousands of boaters participated in during the 2010 boating season.

Each month from June to October, researchers will ask boaters to log onto a mapping website where they can draw their last boating trip on an interactive navigation chart and include information about fishing, wildlife viewing or other activities they did during their trip. Boaters will also be asked how much money they spent on various boating-related activities so economists can determine the overall contribution of recreational boaters' spending to state and regional economies. Sponsors have provided incentive prizes for participants, including a grand prize drawing of $5,000. Boaters that do not receive an invitation in the mail are encouraged to participate in a separate volunteer survey at www.neboatersurvey.org.

SeaPlan survey manager Kim Starbuck says boaters are eager to participate. "I have talked with many boaters who want to make sure that important recreational boating areas and routes are known when coastal management decisions are made." Starbuck adds, "Our partnership with the boating industry, state coastal management programs and private foundations will result in a valuable information resource for coastal planners and the boating community."

SeaPlan, an independent nonprofit organization, is partnering with the Northeast Regional Ocean Council, the boating industry, the University of Massachusetts, and state coastal management programs to conduct this survey. See the complete list of sponsors and partners at www.neboatersurvey.org.

SeaPlan In The News
VIBRANT ECONOMIES • HEALTHY OCEANS

THE WALL STREET JOURNAL.
Saturday, May 19, 2012

Huge survey aims to get read on Northeast boating

Associated Press

BOSTON — They've been cruising the region's chilly waters for centuries and today number in the hundreds of thousands, but much remains unknown about the Northeast's recreational boaters.

Now, a major survey aims to find out more about them, including where they go, how they get there and how much they spend along the way.

The idea is to ensure this large and sometimes overlooked constituency gets proper consideration for its range, local importance and economic impact as ocean development forges ahead. Offshore wind turbines, liquefied natural gas terminals and aquaculture pens are a few of the projects discussed for the areas off the busy coastline.

"If they're going to be encroaching in areas where there is a lot of recreational activity, I don't think it's good for anyone," said boater Rob Harris, a lawyer from Salem, N.H.

About 68,000 boaters were invited by mail to participate in the online survey, which begins this month and runs through October. State and U.S. Coast Guard records indicate about 374,000 boats total are registered in the six states the survey covers — the five New England coastal states and New York.

SeaPlan, a nonprofit ocean research group, is conducting the survey in partnership with the Northeast Regional Ocean Council, state coastal planners and researchers at the University of Massachusetts.

The effort traces back to President Barack Obama's National Ocean Policy, which aims to create a balanced approach to using the country's ocean resources. Planners in the Northeast soon discovered the recreational boating data was sparse, despite a local culture in which packed marinas and highways filled with boats on trailers are part of the scenery between Memorial Day and Labor Day.

The lack of data simply reflects the freedom boating offers, which is central to its appeal but makes it tough to truly measure its impact because people just do their own thing, said Grant Westerson, head of the Connecticut Marine Trades Association in Essex, Conn.

"Everybody's got their own clock and their own calendar and their own desire to go to different destinations," he said.

But coming changes at sea are significant enough that policy makers need a better handle on how boating fits into the mix, said John Weber of the Northeast Regional Ocean Council.

"The stuff that we're talking about right now, wind turbines ... all those sort of new uses out there, we weren't talking about 20 years ago," he said.

The survey was also conducted in Massachusetts in 2010, but it became clear that, since boaters from Maine to New York use the same waters, the survey had to expand to get a comprehensive picture of boating's true effects, said Kim Starbuck of SeaPlan.

Some findings in the Massachusetts survey hint at what could be uncovered in the broader sample. For instance, the Massachusetts survey estimated boating contributed $806 million annually to the state's economy, meaning boating's regional impact could run well into the billions of dollars.

The survey guarantees privacy and asks boaters to participate monthly. The boaters use online maps to plot the route they took on their most recent trip. It also asks them what they did when they got there and what they spent along the way, on such goods as gas and food.

Organizers say the survey needs about 13,600 respondents to get solid enough information to influence policymakers as they plan projects near busy boating routes, or try to minimize any effects on local businesses.

Northeasterners haven't always been amenable to sharing information about their water activities. When federal regulators were creating a registry of the nation's recreational fishermen last decade, for instance, the last and longest holdouts were in Northeast states.

But Harris said he thinks his fellow boaters will be pleased to be part in the survey, which he's already taken as one of several boaters whom researchers asked to help them refine it.

Harris said he goes boating just about every summer weekend, hitting ports up and down the Massachusetts coast, and mixing with everyone from cigarette boat owners to his fellow sailboat owners. His sense is that people will appreciate a chance to let policymakers know what they're doing, and what their priorities are.

"The boating community is pretty vocal," he said. "I think they're going to be very happy to have the forum."

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appeared in The Online Journal at http://online.wsj.com/article/APae1a486219bf4fc689a3f932e3439ec3.html#articleTabs%3Darticle

Appendix M - Billing Insert Advertising 2012 NE Survey

Please participate in the 2012 Northeast Recreational Boater Survey!
Your input will benefit current and future recreational boaters in the Northeast.

The survey will document saltwater recreational boating routes and define boaters' contribution to state and regional economies in the Northeast. Results from this survey will show policy makers the value of boating, inform marine business planning and depict boating activity for use in ocean planning. Learn more at www.neboatersurvey.com.

Northeast Recreational Boater Survey

c/o SeaPlan
89 South ST, Boston MA 02111
(617) 737-2600 ext. 102
www.neboatersurvey.org

Two easy ways to participate:

1. If you received a letter in the mail inviting you to participate, please sign up for the survey at www.neboatersurvey.com using the Unique ID included in the mailing. If you no longer have the Unique ID, please e-mail help@seaplan.org.

2. If you did not receive a letter, but own a recreational boat and use it in coastal or ocean waters in the Northeast, we encourage your participation in a separate volunteer survey at www.neboatersurvey.org.

Please participate in the 2012 Northeast Recreational Boater Survey!
Your input will benefit current and future recreational boaters in the Northeast.

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Appendix N - Example of Boater Survey News from December 2012

Dave Kellam

From: 2012 Northeast Recreational Boater Survey <2012_Northeast_Recreational_Boat@mail.vresp.com>
Sent: Thursday, December 20, 2012 1:17 PM
To: Dave Kellam
Subject: Test Message - HTML Format:Boater Survey News

Click to view this email in a browser

Powered by SEAPLAN

Boater Survey News

December 2012 Home | Survey Details | Supporters | NROC | SeaPlan

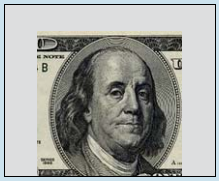
Monthly Surveys Are Done!

After seven months, the data collection portion of the 2012 Northeast Recreational Boater Survey is complete! Thanks to all the boaters who participated. We had impressive response rates from each state throughout the course of the survey, and boaters did a great job plotting their routes and activity points. The final survey of the season gathered additional information about expenditures and boating activity that will add greatly to the final report. A special thanks to our survey sponsors for their support of this successful effort: Massachusetts Marine Trade Association, Marina Bay Boston Harbor, Grady White, and US Harbors.

What's Next?

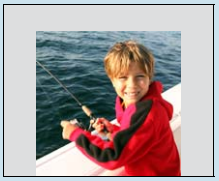
Now that the data collection process is complete, statisticians will clean the data and develop economic impact estimates for the recreational boating sector. Also, our geospatial information system (GIS) technicians will create maps to visualize the spatial data across the region. Beginning in January, the research team will host meetings and workshops with recreational boating industry leaders and state ocean planning representatives, who will together learn about the survey, understand the results and provide recommendations on the best ways to characterize the information. In the spring of 2013, the research team will create a final report and project summary that we will share with regional and state ocean planners, the boating industry, Boater Survey News subscribers, and the survey participants.

Grand Prize Winners



It was a nice holiday surprise for the seven boaters who won grand prizes for participating in the survey. Winners of the $1,000 prize for each state live in Weymouth, MA; Franklin Square, NY; Waterford, CT; Cape Porpoise, ME; Dover, NH; and Peace Dale, RI. The $5,000 regional grand prize winner lives in Gloucester, MA. Also, monthly prize winners enjoyed items provided by our prize donors. Thanks again to everyone who supported this work.

Storytellers' Group



On the final survey of the season, we invited boaters to participate in a storytellers' group. Periodically we will ask members to provide their first-hand accounts of their boating adventures to help us further understand recreational boating in the region and highlight planning issues. We will incorporate these stories in news articles and, if applicable, the final report. The response was enthusiastic with about 400 boaters signing up!

Forward this *Boater Survey News* to a friend

1